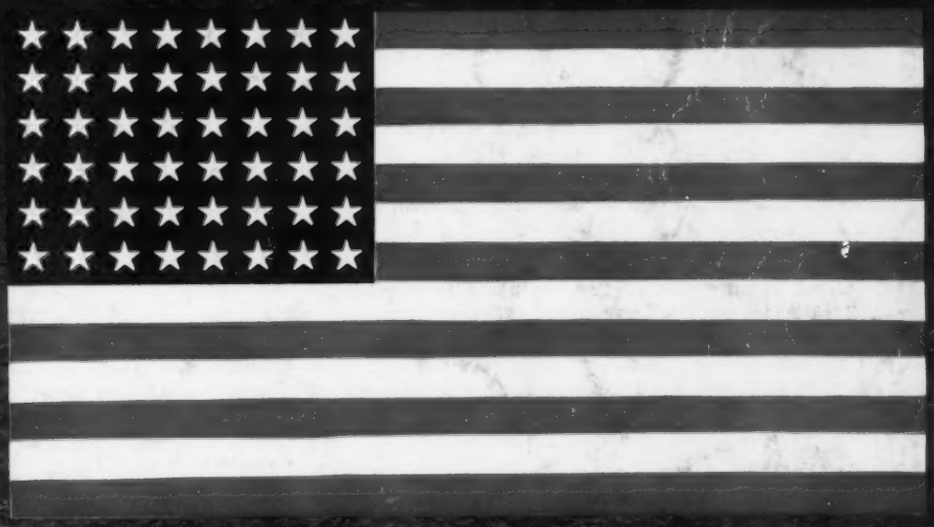
ARCHITECTURAL RECORD

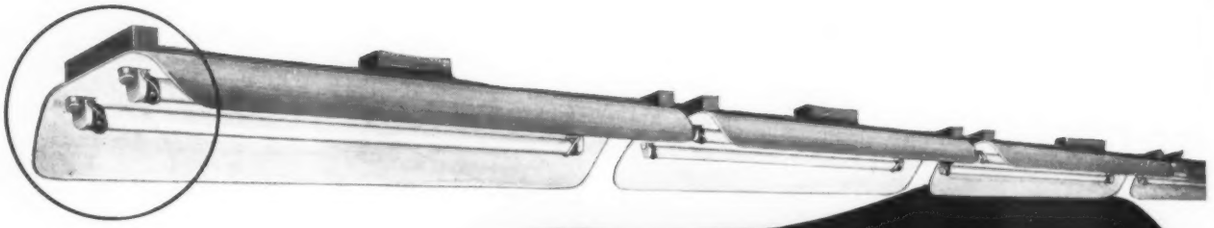


JULY • 1942

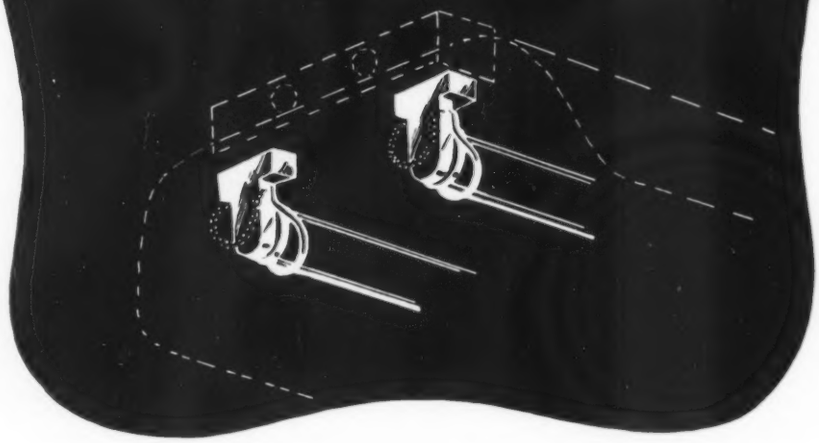
INDUSTRIAL BUILDINGS FOR WAR • HOUGHTON LIBRARY

AIRPORTS AND HANGARS • POSTWAR HOUSE MARKETS

MILLER DOES IT AGAIN!



...with a patented SAFETY LAMP LOCK which prevents lamps from falling!



STUDY CAREFULLY *the details of the MILLER patented Safety Lamp Lock as shown at the right. It is an integral part of each socket—prevents lamps from falling.*

There are several highly significant features of the new MILLER Aero-Designed fluorescent fixture, and its compliance with WPB regulations limiting the use of steel.

Of all features, none is more noteworthy than the MILLER Safety Lamp Lock. The vital spots where it gets in its good work are shown in the circled sockets in the continuous run of fixtures at the top of the page, with the details diagramed immediately above.

It is an extremely important feature to you . . . because it minimizes the risk of lamps falling from sockets. Fool-proof under all conditions, it can mean the saving of time and money in your busy plant . . . yes, the prevention of dangerous accidents, too.

This Safety Lamp Lock is *exclusive* with MILLER. It's a product detail that undoubtedly is one of the best available demonstrations of the constant alertness of MILLER lighting engineers in your interest. It's your best reason for calling in a MILLER field engineer (located in principal cities) today, to talk more about this Aero-Designed fluorescent lighting, and how it can help you.

Other Noteworthy features

FLANGED TOP CHANNEL *simplifies installation—saves labor.*

"EXTRA LENGTH" REFLECTORS—*shield lamp ends—of sturdy Masonite with reinforcing attachment straps.*

IVANITE *the "sealed-in-surface" finish—durable, easy to clean, high reflection factor.*

STREAMLINED—*completely wired channel with exposed ballast for heat dissipation.*

THE MILLER COMPANY • MERIDEN, CONNECTICUT

ILLUMINATING DIVISION
Fluorescent, Incandescent
Mercury Lighting Equipment

OIL GOODS DIVISION
Domestic Oil Burners
and Liquid Fuel Devices

ROLLING MILL DIVISION
Phosphor Bronze and Brass
in Sheets, Strips and Rolls

WAR CONTRACTS DIVISION
War Materiel

MILLER
SINCE 1844

ARCHITECTURAL RECORD (Vol. 94 No. 1, July, 1943) is published monthly by F. W. Dodge Corp., 34 No. Crystal St., East Stroudsburg, Pa., with editorial and executive offices at 119 W. 40th St., New York, N. Y. $3 per year; Foreign, $5. Entered as second class matter, May 27, 1942, at the Post Office, East Stroudsburg, Pa., under the Act of March 3, 1879.

ARCHITECTURAL

RECORD

COMBINED WITH AMERICAN ARCHITECT AND ARCHITECTURE

VOL. 94 NO. 1

JULY • 1943

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H. JUDD PAYNE, Vice-President in charge of Magazine Division

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The RUGGED and RELIABLE FLUSH VALVE for WARTIME BUILDINGS

Vital operating unit remains of time-proven brass construction

THERE can be no compromise with ruggedness and reliability when operating equipment is selected for wartime buildings.

That is why, when we were designing the "V" model Watrous Flush Valve, we were so careful to select for its construction the strongest, most durable alternate materials (metals) American industry can provide. That is why Watrous proved design features were retained. And—very important—that is why we continue, through ingenious use of non-critical materials, to provide the vital operating unit—the piston—in time-proven, enduring brass construction.

This "V" model Watrous Flush Valve is saving tremendous quantities of war-essential materials. It is in compliance with limitation orders.

It is a rugged, reliable flush valve that can be counted upon to deliver the dependable, trouble-free service which is so essential in these times.

THE IMPERIAL BRASS MFG. CO.
1240 West Harrison Street • Chicago, Illinois

Watrous Flush Valves

HERE'S SIMPLIFIED SPECIFICATION DATA on Flush Valves for Wartime Buildings

This bulletin provides:

- √ Information on Watrous "V" Flush Valves which are available for essential wartime construction.
- √ A simplified reference chart which shows the proper flush valve combinations to use to comply with War Department specifications.

Write for Bulletin 858-W, or see the 1943 Sweet's Catalog File, Sec. 27, Catalog No. 39.

WASHINGTON NEWS

Army and Navy construction program. Ending war contracts—what happens then? Postwar planning measures.

There is very little encouraging news from the Army and Navy regarding the immediate future of their respective building programs. Military officials in construction divisions are frank to admit that while there is a large-scale construction schedule now being undertaken, it is of little importance to architects and designers. Much of the new work is for the speedy erection of temporary buildings to be used as hospitals and rehabilitation centers. The type of structure being used at present by both the Army and the Navy is prefabricated, and predominantly of wood. These buildings are so standardized that no new types are being considered for the duration of the war.

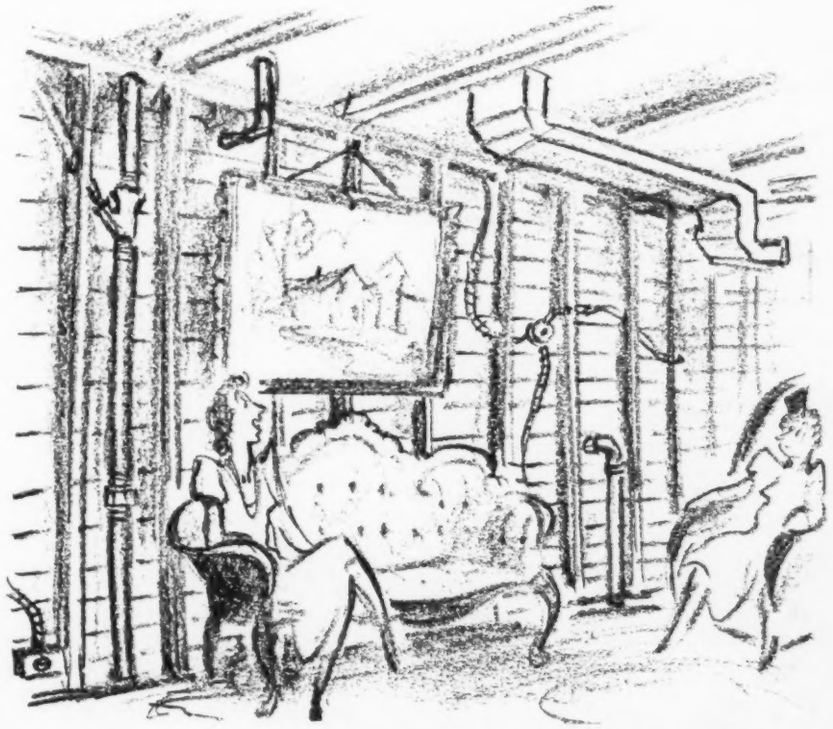
The turning of the tide against Axis submarine warfare has indirectly caused the expansion of the Army's construction plans. Until the past several months the Army has had to slow down its rate of inductions because of the shipping toll taken by enemy submarines. Now, however, we are getting ahead of the manpower draft by successfully increasing shipments of necessary materials to our fighting fronts abroad. This means that the Army has to step up its inductions to keep pace with our transport capabilities. To meet the resultant severe strain being put on present housing facilities for soldiers in the various camps, thousands of new barracks are being built. This vital building program is now being threatened, however, by the serious shortage of lumber confronting both the Army and the Navy. Both services recognize "black market" operations as one of their chief problems in obtaining lumber. The Navy has just started to combat illegal marketing by sending procurement officers direct to lumber camps and mills where requisitioning purchases are made on the spot. If the Army follows this lead there may be a greater shortage of lumber for other types of construction which may be strongly felt by early fall.

Ending war contracts

Prior to Pearl Harbor and the frantic months that immediately followed, the greatest industrial problem this country ever faced was the conversion of our peacetime productivity into a capacity war-production machine. This gigantic industrial miracle was accomplished in a period of time far shorter than the most optimistic wishers had dared believe possible. As the war has progressed we have had to face other production problems which either have been or are being solved. However, the most important and most vexing problem we still must meet will be that of terminating war contracts if the war should end suddenly.

Businesses by the thousands have converted from peacetime operations and are now engaged 100 per cent in war production. This means that such a company in all probability has changed its physical plant. All of its capital is now tied up in war contracts that could be ended almost overnight should the Axis collapse. There are relatively only a small handful of individuals here in Washington who are devoting their time and thought to the countless problems which American industry will face should this possibility come to pass. The Maritime Commission, Army, Navy, and the War Production Board are working jointly on a "termination clause" to be used in war contracts. The purpose of such a provision will be to avoid the complete collapse of any company now engaged solely in war business.

(Continued on page 10)

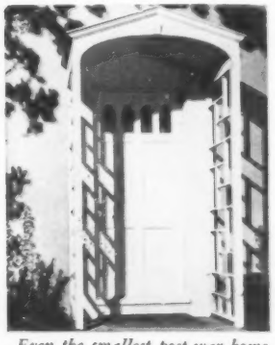


"Perhaps I should explain that my architect believes in exploiting the natural characteristics of the materials."

—Drawn for the RECORD by Alan Dunn

doorway ...to tomorrow

IN a very real sense, Curtis Woodwork opens—today—a doorway to tomorrow for architects who are planning post-war homes. For Curtis Woodwork offers two important advantages which will be "musts" in the post-war world. First, the beauty, the friendliness, the quality which prospective home-owners dream of today. And, second, such important features of truly modern construction . . . the greater resistance which wood gains through scientific toxic and water-repellent features . . . plus the enormous cost advantage of stock designs. You'll want to study the many new Curtis Woodwork designs as a stimulus to your post-war thinking . . . send for your free copy of the Curtis Woodwork book. Curtis Companies Service Bureau, Clinton, Iowa.



Even the smallest post-war home need not forego the charm of a beautiful entrance. In this Curtis design, informality blends with pleasing dignity.

Thanks to Curtis production methods, correctly styled and proportioned mantels are available at low cost for post-war homes. Curtis offers a wide variety of mantel designs.

Curtis stock stair parts offer the architect wide scope in designing stairways for all types of homes, in all architectural styles.

1866 CURTIS WOODWORK

Post-war homes will need plenty of storage space—and this Curtis china closet not only provides such facilities, but adds charm as well.

Beautiful simplicity such as this calls for the very highest degree of designing skill. Yet this is stock *woodwork—as manufactured by Curtis.*

SEND FOR THIS BOOK. "New Woodwork in Tune with the Times" contains new woodwork ideas by outstanding American architects. Mail your request to Curtis Companies Service Bureau, Dept. AR-7W Curtis Building, Clinton, Iowa.

A 100% RECORD
Awards on May 8th, 1943 to two plants in Kenosha, Wisc., completed this 100% record for The American Brass Company.

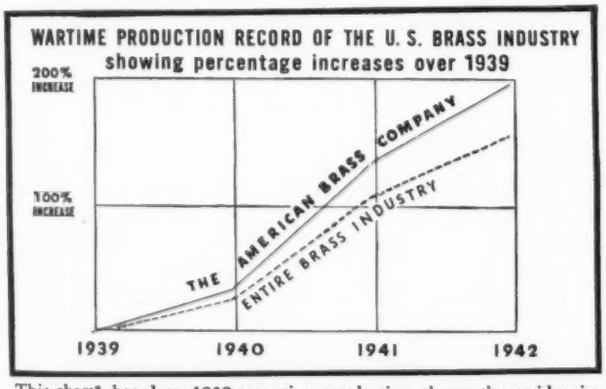
ALL TEN AMERICAN BRASS CO. PLANTS IN U. S. A. HAVE EARNED RIGHT TO FLY ARMY-NAVY "E" FLAGS

This is the story in terms of war production

Our Connecticut plants were among the first in the brass industry to receive the coveted "E" Award for outstanding production of war materials. Since then *all* our plants, including those in the States of Michigan, Wisconsin and New York, have been similarly honored.

As the largest fabricator in the copper and brass field, The American Brass Company is keenly aware of its responsibility and its opportunity to serve the cause of the United Nations.

Since 1939, production has been tripled, with virtually every pound today going for war purposes.



This chart*, based on 1939 peacetime production, shows the rapid swing into all-out war production, both by the copper and brass fabricating industry and The American Brass Company (not including Government-owned plants). All-time production records have been continually broken ever since the National Defense Program was initiated in 1940.

*Based on compilations of The American Bureau of Metal Statistics

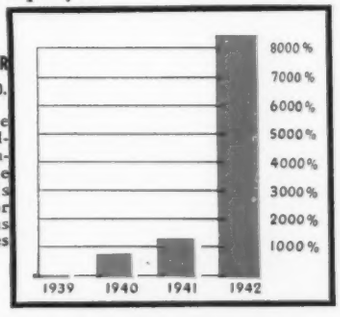
This record was accomplished by close cooperation between management and labor . . . careful planning for rapid conversion to wartime operations . . . intensive training of new personnel . . . plus efficient utilization of existing and new plant equipment.

Detailed figures, of course, cannot be revealed, but The American Brass Company is consistently breaking all previous volume records. In addition to its U. S. plants and that of a Canadian subsidiary, Anaconda American Brass Ltd., the company's production also embraces three plants operated for the United States and Canadian Governments.

Shipments this past January were the largest in the company's history. March exceeded January. The first quarter of '43 was by far the greatest tonnage quarter in the records of the company.

PRODUCTION OF COPPER ALLOYS FOR AMMUNITION by The American Brass Co.

This chart shows the vast increase in production of copper-base alloys directly earmarked for ammunition in plants operated by The American Brass Company. This is one of the most vital needs for copper and brass. Tremendous quantities are required for all types of ammunition.



The American Brass Company is proud indeed that all the plants it operates in the U. S. A. have won the honor of flying the Army-Navy "E" for excellence in production. But it is even prouder of the organization and the will-to-produce that have made this record possible . . . *and will keep it going.*

431840

THE AMERICAN BRASS COMPANY

ANACONDA

Subsidiary of *Anaconda Copper Mining Company*

BUY ALL THE BONDS YOU CAN AFFORD . . . TURN IN ALL THE SCRAP YOU CAN FIND

(Continued from page 7)

Many companies have neglected to establish postwar reserves with which to finance re-conversion. Others have set up such reserves but have little or no idea of what to do when their war contracts are terminated. In many instances they will have on their hands a plant constructed for the sole purpose of manufacturing war goods. In some cases they will be faced with the total loss of their former civilian markets and may be short of materials with which to produce a civilian peacetime product. Architects and industrial engineers will be called upon to test their ingenuities to the highest. An official in the Smaller War Plants Corporation stated that in many present war plants some minor physical or architectural change would enable production to be re-geared for peaceful purposes while in other cases greater amounts of building changes may be necessary to re-convert to effect normal production.

Postwar planning

While Congress has about sounded the death knell for the National Resources Planning Board, we can expect numerous posthumous off-spring from that agency's now famous postwar planning report. A bill introduced in the House by Representative Walter A. Lynch of New York has aroused little comment, but may well be heard from in the not too distant future.

The Lynch bill provides for a close cooperation between the federal government and the states in postwar plans. It serves to encourage the states and their smaller political subdivisions to make intelligent programs for future planning. The bill further aims to have the federal government give financial aid to the states for such purposes. Under the terms of the proposed legislation the various states would establish local agencies which would prepare and maintain plans and programs. It proposes that the federal government make an annual appropriation of not less than $10,000,000 for each fiscal year to be used in making payments to those states that have set up agencies for postwar development. The funds authorized would be allotted to the states on the basis of area and population.

Mr. Lynch would somewhat revive the NRPB by giving it a new duty and function under the terms of the bill. Funds would be allotted only to those states which have been duly certified by the NRPB. The Board's investigation of each state applying for such funds would ascertain whether or not that state has substantially complied with the requirements of the proposed legislation.

The bill, which is now in committee, also provides for advances to be made by the President to state agencies to be used for making surveys and plans for specific public works projects. An appropriation of $75,000,000 would be authorized to be used for such state projects with the proviso that such sums would be loaned to the states and would later be repaid by the states.

In addition to Congressman Lynch's bill, Senator Robert F. Wagner of New York has introduced a bill in the Senate which would encourage the development of better housing and living accommodations in towns and cities throughout the country. The Wagner bill would authorize the National Housing Agency to issue long term loans to municipalities for the purchase of land which the municipalities would then re-sell or lease to private builders for development strictly in accordance with the city plan. The bill carries with it an authorization for the appropriation of $1,000,000,000 as a fund out of which the NHA can make appropriate loans. The measure has been referred to the Senate committee on Banking and Currency.

—J. Maxwell Dickey
Washington Correspondent

★ ★ ★

FACILITIES BUREAU

WPB has announced the organization of the Facilities Bureau, whose task will be to see that the maximum utilization is obtained from the nation's existing plant facilities and to plan for the minimum amount of new construction which will be required. The Bureau will be headed by Charles E. Volkhardt.

Under the organization as announced there are four units: Office of the Director; Project Division; Production Resources Division; and Progress and Scheduling Division. These will replace the Facilities Program Division, the Construction Division and the Facilities Division, all of whose functions will be absorbed by the new units.

This realignment has been carried out to provide a close-knit organization to administer the new WPB policies controlling future facility expansion. The Bureau will provide staff services for the newly-organized Industrial Facility Committee and Non-Industrial Facility Committee, bringing together figures on present and anticipated requirements and supply of facilities and will recommend programs to the Program Vice Chairman.

Among the functions to be performed by the new Facilities Board are: to assist the appropriate industry divisions and claimant agencies to increase the maximum utilization of existing buildings and facilities in order that the need for new facilities and construction will be minimized; to reduce to a minimum the use of critical materials for construction, capital equipment, tools and machinery; to plan the scheduling of facility programs and projects; to maintain current information on progress of facilities or construction and render whatever assistance may be required in completing such programs and projects.

LEAD RESTRICTIONS RELAXED

Government wartime controls over the use of lead have been further relaxed through issuance by WPB of a revised General Preference Order M-38. This order places no restrictions whatever on the use of lead for purposes considered essential by WPB. The only restrictions are contained in a short list of prohibited items, all considered non-essential. Restrictions on roofing and weight of flashing and waterproofing are removed, as is the

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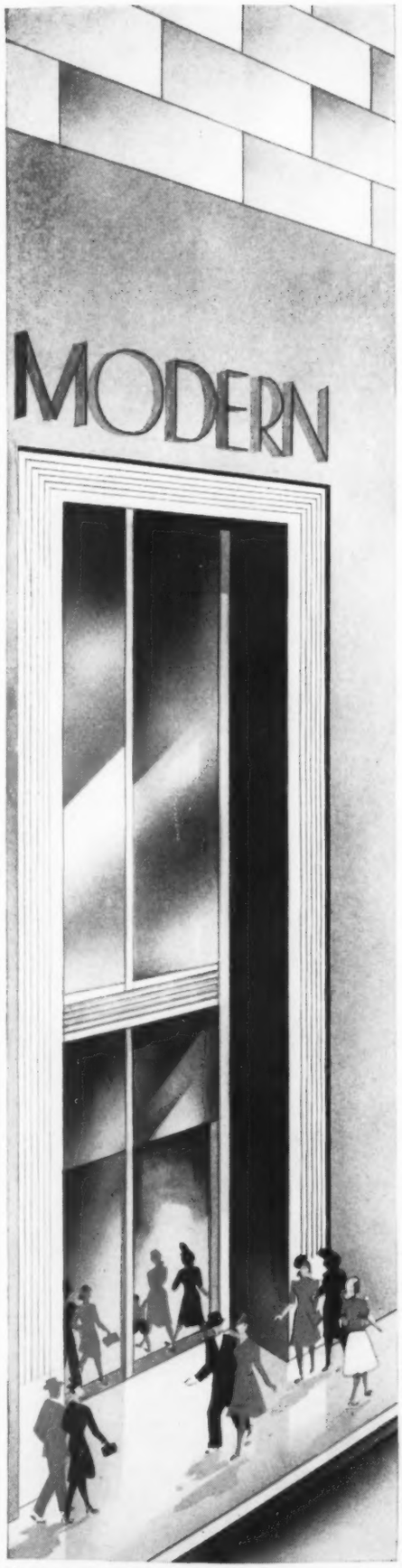


Air Conditioning
WORTHINGTON
REFRIGERATION

Architectural Post-War Planners are Agreed:

"FINE STORES WILL HAVE FINE AIR CONDITIONING IN 194?"

It is not too early for anyone with vision to perceive the shapes and pattern of our post-war world. Architects and engineers know for a certainty that Air Conditioning must be a considered factor in the functional design of commercial structures.

The tenants of smart shops and fine retail stores will rightfully expect this as a matter of course. Fortunately when the time arrives for the blueprinting of specific, individual plans, architects will find that their work has been immeasurably simplified by the developments of Worthington engineers.

A complete line of compact, flexible units, designed with all the advanced skill induced by the war, will be available. And from the largest industrial installation to the remodeling of a small, exclusive shop, their cooperation, their broad experience will be at the command of architect and engineer alike.

WORTHINGTON PUMP AND MACHINERY CORPORATION, HARRISON, N. J.
District Offices and Representatives in Principal Cities

CA 3-32

WORTHINGTON AIR CONDITIONING AND REFRIGERATION

Looking Ahead in Air Conditioning with Frank H. Faust

FRANK H. FAUST, *Commercial Engineer of General Electric's Air Conditioning and Commercial Refrigeration Dept., and author of the article on air conditioning in the Encyclopedia Britannica 1943 "Book of the Year," is widely known in air conditioning and refrigeration circles. We are pleased to present his thoughts in this, the third, of Kinetic's series on "Looking Ahead in Air Conditioning."*

"There are still some people—architects and engineers not excepted—who express considerable surprise upon learning that air conditioning and refrigeration equipment is being manufactured, currently, in considerable volume. These are people who think of air conditioning as an instrument of personal comfort and who have forgotten, or did not know, that in the early stages of air conditioning it was used primarily as an aid to production.

"Today, with the demands of war requiring all of our many industries to operate at a pace never before approached in our history, air conditioning is making important contributions in those industries where it has long been accepted as a condition of production.

"The war has also brought many new and vital applications for air conditioning products. For example, stratosphere chambers, wherein climatic conditions existing anywhere in the world can be duplicated at will. These chambers are urgently needed for the testing of implements of war which must function as well in the severe cold of the far north as they do in the heat of the desert—which must operate as reliably at altitudes of 40,000 feet as they do at sea level.

"In the construction of all types of military equipment—from delicate instruments to mighty airplane engines—microscopic tolerances never before achieved in mass production are being made possible through air conditioning which provides accurately controlled conditions of temperature and humidity.

"When the war is over and the story of air conditioning as an instrument of war production can be told in full, it will make exciting reading. Certainly the lessons learned in applying air conditioning to wartime needs, in minimizing the use of materials and labor, and in substituting less-critical for more-critical materials are bound to have an evolutionary affect upon the design of postwar air conditioning equipment."

REMEMBER—"Freon" refrigerants are nontoxic, non-explosive, non-flammable, non-irritating. They cannot harm food or clothing. By every measure they are the world's safest refrigerants. Kinetic Chemicals, Inc., Tenth and Market Sts., Wilmington, Del.

KINETIC

FREON

REG. U.S. PAT. OFF.

safe refrigerants

"Freon" is Kinetic's registered trade mark for its fluorine refrigerants.

THE RECORD REPORTS

(Continued from page 10)

former restriction on the use of lead for many purposes to a quantity not exceeding 90 per cent of the amount used in a base period.

WPB APPLICATION FORM REPLACED

Form PD-200, the form used to make application for authority to begin construction and for priority assistance, has been replaced by a new form known as WPB-617, the War Production Board has announced.

In addition to the functions performed by the old PD-200 forms, the new WPB-617 constitutes an application for allotment of controlled materials. The filing of additional forms for controlled materials will no longer be necessary, since controlled materials will be allotted simultaneously with the granting of authority to begin construction.

FIELD ADMINISTRATIVE ORDER AMENDED

The types of construction for which applications are processed in Regional Offices were enlarged in an amendment to field administrative order 708-20, WPB has announced. This order delegates authority to Regional Directors to permit construction under Order L-41 and to issue preference rating orders provided the estimated cost is less than $10,000.

Among the types of construction now processed in the field are those which increase by less than 20 per cent the capacity of productive facilities and off-farm storage facilities for agricultural products, including drainage and irrigation facilities serving more than one farm, creameries, warehouses and grain elevators.

Not covered by the amendment is any construction or remodeling of these off-farm facilities to produce a different type of product or to increase capacity by more than 20 per cent. Also not covered is off-farm industrial type food-processing facilities such as canneries and packing houses. Applications for such construction will be processed in Washington.

INDOOR CLIMATE

Plans for the formation of an industry-wide cooperative educational program known as the "Indoor Cli-

(Continued on page 90)

THE MOST WANTON DESTRUCTION IN HISTORY

HERETOFORE, WHEN FIRE STRUCK, it was a calamity to an individual business enterprise. Even with insurance protection for plant and materials, experience has proved that loss of records, customers and employees has crippled a burned-out business in at least two out of every five instances.

But today, when fire destroys a plant or vital war materials so sorely needed by our fighting forces, it is little less than a national calamity. Where such destruction occurs in spite of the fact that *it could have been prevented,* it is literally the most wanton destruction in our history.

Fire CAN Be Controlled! The one sure way to control fire is *at its source, when it starts* . . . with Automatic Sprinklers! Grinnell Sprinkler Systems detect and check fires *automatically,* night or day, before major damage can occur.

The Cost in materials is LOW One Grinnell Sprinkler Head protects 100 square feet of building space. Installed, it needs only about 50 pounds of pipe, fittings and valves . . . yet it can save tons of structural steel and other critical materials. This comparatively small expenditure of materials can provide the 24-hour-a-day protection against fire which will keep your plant producing and helping to win the war instead of becoming a charred heap – useless when so desperately needed.

Get in touch with Grinnell today, *before fire strikes!*

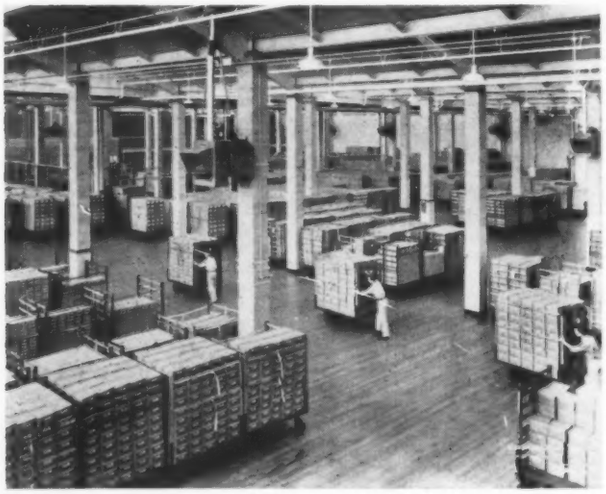
Grinnell Company stands ready to protect your warehouse or plant against fire. Experienced engineers at nearby offices are ready to help you. Call them. Grinnell Company, Inc., Executive Offices, Providence, R. I. Branch Offices in principal cities.

GRINNELL

AUTOMATIC SPRINKLERS

For Production Protection

MAPLE STANDS UP ...on The Alleys!



It Stands Up Just As Well In Floors

Ever see a tenpin crack, or split, or splinter? Or, see wood take greater punishment with less mark of abuse?

It's Northern Hard Maple—and the same tough-grained resistance to crushing wear and tear makes Hard Maple best for heavy-duty floors! It takes everything punishing traffic can give it and comes back, neatly and clean, for more.

Hard Maple's resistance to wear means low upkeep cost. Traffic moves easily, safely, over its smooth, non-slippery surface. Comfortable under foot, it resists spots and stains, is thoroughly cleaned by brushing when properly finished. And bright, clear Hard Maple floors reflect light, improve illumination.

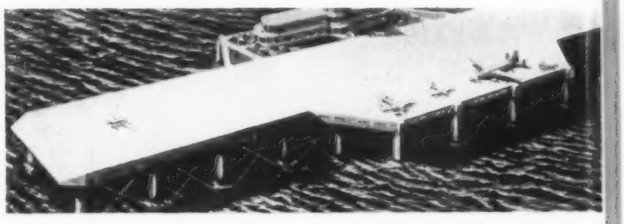
The superiority of Northern Hard Maple for flooring in war industry and food plants, textile mills, defense housing, stores, schools, and other public buildings, is acknowledged. Whether the job is reconstruction or new, consider Maple. In strips or blocks; see Sweet's, 11/57.

MAPLE FLOORING MANUFACTURERS ASSOCIATION
1782 McCormick Building, Chicago, Illinois

Write for illustrated literature featuring grades, specifications, etc.

Floor *with* **MFMA** Maple
REG. U. S. PAT. OFF.
(NORTHERN HARD)

SEADROMES PLANNED

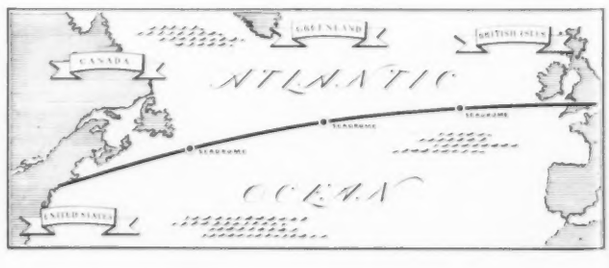


Pennsylvania-Central Airlines' application for permission to establish a "Seadrome" route between the United States and Great Britain, recently filed with the Civil Aeronautics Board, brings to a head an idea of many years' standing. As far back as 1915 a plan for a series of floating airdromes reaching across the Atlantic was proposed, and by 1919 the projected seadrome had assumed many of the characteristics of the present proposal.

The current project calls for three steel "islands" spaced at 800-mile intervals, all well out of the fog and ice zones. These seadromes, invented and developed during the past ten years by Edward R. Armstrong, construction engineer of Philadelphia, would be 64,000-ton structures standing 70 ft. above the ocean, with numerous vertical buoyancy tanks supporting the deck. Their 160-ft. draft is designed to assure absolute stability. In addition to the complete airport facilities—including that of refueling—provided by each seadrome, hotel facilities are contemplated so that passengers desiring to "vacation at sea" and wait for a later plane may do so. Aviation experts and various governmental commissions here and abroad are reported to have studied and approved the technical feasibility of the project.

The short 800-mile hops between seadromes would greatly increase the weight carrying capacity of the planes, it is pointed out, increasing by several hundred per cent the payload possible. The resulting economy of operation would mean substantially lowered passenger fares. Furthermore, in the opinion of C. Bedell Monro, president of the Pennsylvania-Central Airlines, no new plane designs would be necessary, the planes which are flying overland today being able to fly the seadrome route both easily and economically. And such a series of air bases would secure for the United States an advantageous position in transatlantic air commerce, Mr. Munro added. He emphasized that the new bases will be accessible to qualifying airlines of all nations.

The Sun Shipbuilding and Drydock Company announces its intention to construct the seadromes as soon as steel is available. Financing is to be by private capital, with many large industrial organizations interested.



Above: Morris Ketchum, Jr., and Lustron battery case for walkie-talkie radio. Recognized as an expert in the design of modern commercial buildings, Mr. Ketchum is associated with the New York architectural and engineering firm, Harrison, Fouilhoux and Abramovitz and is an instructor of Architectural Design, New York University.

FROM A WALKIE-TALKIE BATTERY ...A CAMERA STORE FOR 194X!

STORIES of a number of wartime plastics uses contributed to this conception of a camera store for 194X by New York Architect Morris Ketchum, Jr. One which particularly fired his imagination, however, was a battery case for compact walkie-talkie radios molded from Lustron, Monsanto's lightweight, water and weather resistant polystyrene.

Starting with a ceiling of translucent Lustron panels which make use of those same qualities, Mr. Ketchum has gone on to visualize a complete store based on the logical development of wartime advances in several other Monsanto plastics as well.

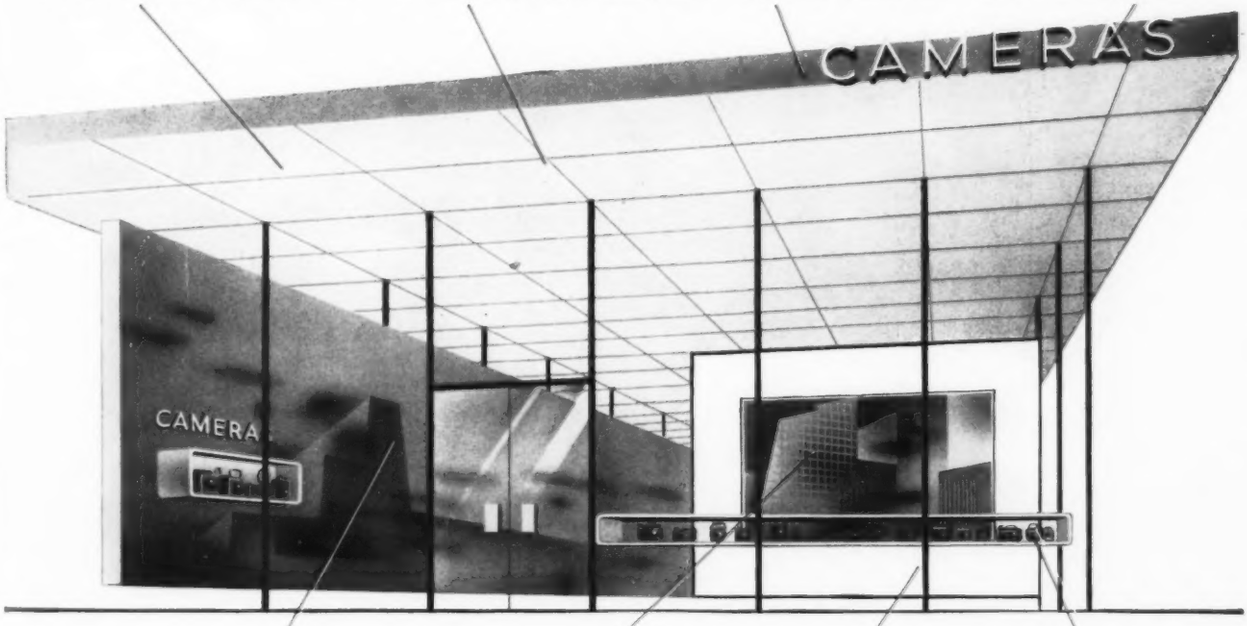
Mr. Ketchum's store, however, is by no means an all-plastics creation. Where other materials promise to serve better than the plastics we may expect to have available in the near future, those other materials have been specified.

Ceiling: Standard size, clip-on panels of translucent Lustron — chosen for its lightweight, dimensional stability and acid resistance — carry over both the outside lobby and the interior. Above panels is overall lighting system including both incandescent and fluorescent illumination.

Ceiling moldings support panels, also serve as continuous wireways or plug-in strips for downlight fixtures. They might be formed from any one of three Monsanto plastics, Lustron, Resinox or the newest of the family, melamine. As panels are removable, lighting system is easily rebuilt.

Canopy fascia: plastics-bonded plywood which could be surfaced in any desired color with new types of recently developed weather, water and age resistant melamine resins.

Canopy letters: molded from translucent, colored Lustron. Thanks to Lustron's ability to "pipe" light, they could be edge-lighted from a concealed source in the canopy fascia.



Photomural wall, eight feet high and the length of the store, is mounted on continuous length of Resinox or melamine-bonded plywood. A film of transparent plastic protects it from wear and careless hands. As a result, it can be cleaned with soap, water and scrubbing brush.

Projection screen: Rear wall of sales area is a large, recessed screen on which could be shown still or motion pictures. Screen, perhaps of a plastics composition, is recessed to increase its luminosity and might also be mounted on light, dimensionally stable, plastics-bonded plywood.

Supporting columns: thin, strong columns of steel or one of the new, light metal alloys. Where maximum strength per unit of area is desired, metals are still superior to plastics.

Door, glazing, and showcases: might some day be formed from non-shatterable, flexible or semi-flexible sheets of transparent plastic but in predictable future should be glass.

The Broad and Versatile Family of Monsanto Plastics

(Trade names designate Monsanto's exclusive formulations of these basic plastic materials)

LUSTRON (polystyrene) • SAFLEX (vinyl acetal) • NITRON (cellulose nitrate) • FIBESTOS (cellulose acetate) • OPALON (cast phenolic resin) RESINOX (phenolic compounds)

Sheets • Rods • Tubes • Molding Compounds • Castings • Vuepak Rigid Transparent Packaging Materials

MONSANTO PLASTICS

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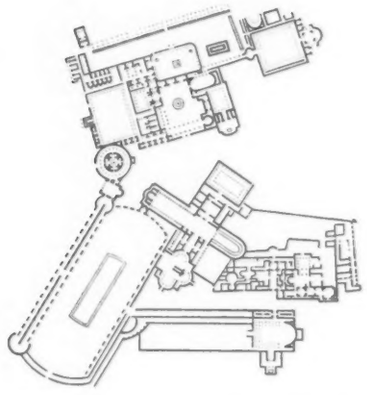
WHAT EVERY PROPHET SHOULD KNOW

Frankly, much development work has yet to be done in laboratories of established building materials suppliers and plastics manufacturers alike, before the store Mr. Ketchum has sketched opens for business. As one of the nation's largest producers of plastics, however, Monsanto is interested in encouraging intelligent, creative prophecies like Mr. Ketchum's. For only when the logical possibilities *and* limitations of plastics are fully understood can they contribute to the fullest to a better postwar world. MONSANTO CHEMICAL COMPANY, Plastics Division, Springfield, Massachusetts.

REQUIRED READING

By ELISABETH COIT, AIA



Emperor Hadrian's villa. From "The City"

THE CITY: ITS GROWTH, ITS DECAY, ITS FUTURE.

By Eliel Saarinen. New York (330 West 42nd St.), Reinhold, 1942. XVI—380 pp. 6 by 9¼ in. illus. $3.50.

Many publications have treated one or another aspect of town planning for professionals: for designers, administrators, etc. Mr. Saarinen's "City" is written chiefly for the layman; but student and specialist will read it, too, and find it revealing and stimulating.

Many people not directly concerned with city making, yet disquieted by the vague but persistent question as to how did we get that way, will welcome especially the short second section showing the puzzling overgrowth and decay to be relatively recent and the result of two popular movements: (a) the surge of industrial workers from rural water-power sites into urban centers with steam-power and (b) that "little knowledge" made common by popular education, as a result of which architecture became "involved in stylistic escapades."

Following the chapter showing the origin of cities as illustrated in the organic growth of the medieval town "more or less our direct ancestor in town formation"—small, compact, walled, free of traffic, surrounded by wood, field and stream, and depending for its "style" and layout on its site and its strategic location—this section on decay puts the reader into a good position to consider what remedies for present ills are possible in building for an age of speedy communication by car, plane and radio.

Time will be needed. There is no precedent to follow in today's work of providing harmonious, convenient and healthy places for human development. Perhaps architectural schools need to give some attention to the matter—not so much of town planning (zoning, traffic, sanitation) as of town building for the spiritual as well as the physical well-being of the people: building in three dimensions which, if well done, will prevent decline over a long period.

"Styles" will take care of themselves. Harmony has been achieved in notable cases by the use of many styles juxtaposed as well as with one style or a few.

People need social and cultural centers; they need also open space and opportunity to enjoy nature. Small cities, greenbelt towns, decentralization within large cities through clearing slum districts for park space, seem to be the answer rather than more and bigger skyscrapers in metropolitan centers in the making and government of which the individual can take little part.

This first American book by a world-famous master is a matter for congratulation to him and to his readers who will rejoice as much, perhaps, in the incisive, convincing style of the work as in the matter it conveys.

AN AUTOBIOGRAPHY.

By Frank Lloyd Wright, New York (270 Madison Ave.) Duell, Sloane and Pearce, 1943. 561 pp. 8½ by 8½ in. port. $4.50.

The new edition of the "Autobiography" apart from its inherent interest amplifies and interprets the two good recent companion volumes which might more logically have followed it: "Frank Lloyd Wright on Architecture," edited by Frederick Gutheim (ARCHITECTURAL RECORD, June '41, p. 28), and "In the Nature of Materials," by H. R. Hitchcock (ARCHITECTURAL RECORD June '42, p. 80). Those two works will be read by anyone seeking fully to enjoy the "Autobiography," which is a purely personal and undocumented account of the man whose "selected writings 1890-1940," fill a good-sized book in this series and whose 200 projects and executed buildings a much larger one.

In the present work so much new material has been added to that contained in the 1932 edition, and so different has been the author's experience since then, that he seems almost justified in feeling that it is a new work and in labelling it "first edition." In fact, however, practically all the earlier work, "Family, Fellowship, Work, Freedom," is preserved in this one, and it is happily significant that so much of the free-flowing informal narrative of endeavor, experiment, success, repeated catastrophe and recovery, set down at a time of enforced idleness, should be thus retained in almost its original form.

The new material, about a third of the whole, covers the first ten years of the Taliesin Fellowship; records new experiments in construction, such as those for the Johnson plant in Racine; describes attempts to solve "America's major architectural problem, the satisfactory house of moderate cost;" shows modest appreciation of invitations to speak in Moscow and London and of the Royal Birthday Honours medal following this latter; and some things to say on -ists and -isms made -istic by -ites; and gives one or two good FLlwisms, such as: To Saarinen who asked Wright's opinion of the E. S. design for a million-dollar church, when F.Ll.W. was designing one to cost about a tenth of that sum, "When I saw it I thought what a good architect *I* am."

This book needs a sequel, not too far in the future, to tell something of the influence of Broadacres on this stage of town-planning thought; something of what increasing knowledge and recognition of an architect still "far less well-known than famous" will bring; and of how far in post-war training "inflated education" will give way to training on the pattern of the Taliesin Fellowship, with apprenticeship and craftsmanship paralleling technical instruction, giving first-hand knowledge of building materials and processes, of country beauty

(Continued on page 28)

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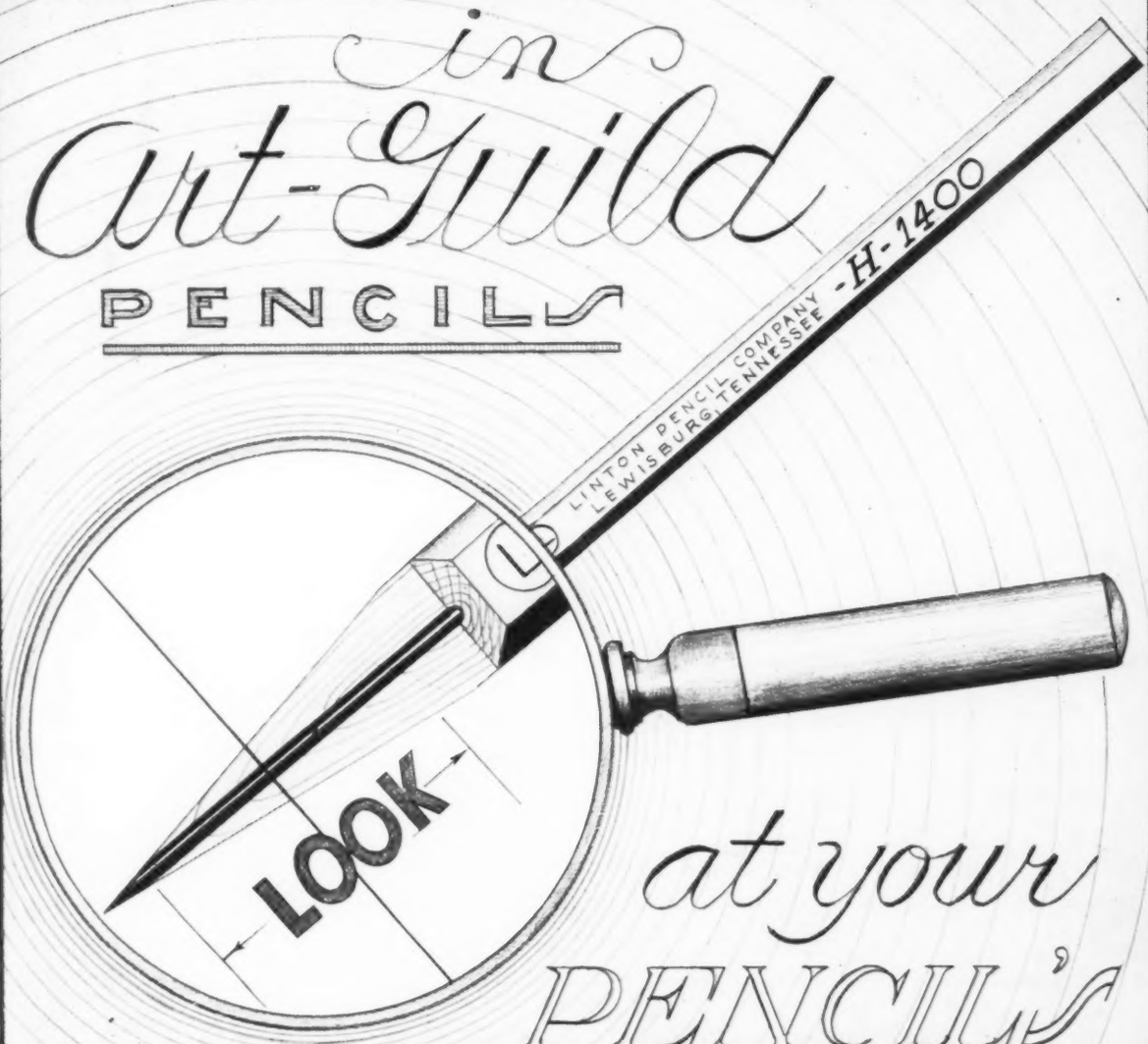

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REQUIRED READING

(Continued from page 26)

and country problems, and experience of self- and fellow-service from cooking stove to dining room, recreation and entertainment.

THE FOUNTAINHEAD.

By Ayn Rand, New York (468 Fourth Ave.) Bobbs-Merrill, 1943. 574 pp. 5⅜ by 8½ in. $3.00.

Nearly half a million words about architects and their clients, for the most part in settings so distinguished that one household has even "two stately butlers."

Peter and Howard, friends fresh from architectural school, go to New York in 1922.

Peter, amiable and popular, progresses quickly from draftsman to head of one of the "best" offices, designing in traditional styles to please his public: at 29, ambitious "to be the one architect of this country in my day" or nothing; winning the "Most Beautiful Building in the World" competition and other successes with designs contributed sub rosa and gratis by Howard; the husband of "an ideal wife" to whom he is everything she despises, with whom he cannot bear to be alone, and whom he exchanges for $250,000 and a commission; by attempted blackmail arriving at "murder . . . almost murder;" by attempted bribery losing his one forward looking prop, and so finished as an architect at 39.

Howard, on the other hand, believes "the world is perishing in an orgy of self-sacrificing," designs to please himself structures for service, home, resort and business, as well as a temple, luxury apartments and low-cost housing to rent at $15 monthly: all apparently not traditional, apparently beautiful, efficient and economical. He stands captain of his soul through a stormy life which includes poverty, riches, rape, dynamiting a public housing development, and searing all his friends, and on p. 750 he is commissioned to do "the last skyscraper ever built in New York," for a client who had "spent his life pulling the strings of the world" and who "had seen it all."

Other architects there are too: among them Cameron, "an old drunkard . . .

(Continued on page 30)

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REQUIRED READING

(Continued from page 30)

who built skyscrapers 20 years ago," the repulsive president of the A.G.A., and the editor of its Bulletin; the cheap wit of the profession; Gus of the harmless obscene obsession, and Guy, the employee, employer, friend or father-in-law (or several of these) of most of the other characters. This last via a daughter who hated architecture yet wrote architectural criticism for a journal standing "for everything she abominated," and whose perverseness seems limited only by lack of imagination, ability and time.

PLUMBING PRACTICE AND DESIGN
Vol. 2.

By Svend Plum. New York (440 Fourth Ave.), Wiley, 1943. 329 pp. illus. $4.50.

Completion of the work noted in April (p. 26) having for its aim, consolidation of data scattered through works on architecture, and mechanical, sanitary and civil engineering, so as to give this ancient and useful craft long "treated as a stepchild" its proper place in a modern world of engineering technique.

SIMPLIFIED DESIGN OF REINFORCED CONCRETE.

By Harry Parker, New York (440 Fourth Ave.), Wiley, 1943. 249 pp. 5 x 8 in. illus. $2.75.

The professor of architectural construction at the University of Pennsylvania and joint author of the Kidder-Parker "Architects' and Builders' Handbook" issues this work as a companion to his "Simplified Roof Trusses . . ." and "Simplified Engineering . . .," both, like the present work, designed primarily for architect and builder but well adapted for use of anyone knowing high-school algebra and elementary mechanics.

A great part of the book consists of illustrative examples giving the solution of the design of structural members and of problems to be worked out by the student; all necessary tables and formulae are included and the arrangement and format are the pleasant ready reference type of others in the series and of the "Handbook."

(Continued on page 98)

THE HOUSE OF THE FUTURE, 194?-195?

THE house-of-the-future will perform the same functions as the house-of-the-past and the house-of-the-present. The functions of this house will be to provide shelter, privacy, comfort and convenience for each member of the family, and for the family as a whole. It will serve the familiar physical functions, and provide the space, the furnishing, and the equipment for the family activities as we have known them, augmented by additional labor-saving devices and recreational and cultural facilities. Consistent with the history of architectural and building progress, advantage will be taken of opportunities afforded by new materials and new structural methods to produce better houses for less money.

★ The house of the future will have rooms—rooms thoughtfully planned for maximum use of the space enclosed. Rooms will have, in many cases, multiple functions at different times of the day and night.

★ Most houses will have foundations, either continuous or piers, with the main floor near the level of the ground. Cellars will be demanded in many regions, but for reasons of economy they may be dispensed with as mechanical equipment becomes less bulky and more seemly, and storage space, formerly in the cellar, is supplied elsewhere.

★ The house of the future will have floors, walls, ceilings, partitions, and roofs. The walls will be of various materials and combinations of materials, selected for strength, durability, insulating properties, weather-protection, appearance. Access will be through doors which will also serve to separate one room from another for more privacy, visual and auditory. The house will have windows to admit sunlight and air and to permit views and vistas of the outside; window panes will be of transparent materials. Windows will have adjustments to regulate the quantity and quality of light, heat, air, and vision, and means for deterring invaders of all sorts, from bugs to burglars.

★ The house of the future will be provided with a furnace, boiler, heater—equipment for maintaining comfortable temperature, humidity, and circulation of clean air, augmented where necessary or desirable by radiant heat supplied through electrical devices. Sanitary facilities will be provided for cleanliness, and general health. Water for all purposes will be supplied through pipes to the fixtures at the point of use. Flush toilets (originally invented in prehistoric Crete) will still be used in postwar houses.

★ The houses will have automatically-operated refrigerators, and the preparation of food will be facilitated by many electrical devices. Cooking will be made more efficient, economical, cleanly and convenient as the familiar types of ranges are further developed. Communication with the outside world will be through the telephone, radio, and television. Audible communication within the house will be by similar means. The family car of the future will have its own storage room known as the garage, conveniently located with respect to the services of the house. Later, the family helicopter may have its own garage near the landing lawn or, in larger houses, in connection with the roof.

★ The house of the future will probably be put together more rapidly than the house of the past, thanks to the evolving techniques of the building industry. Materials and equipment that can be produced in the factory in easily-handled sub-assemblies will be available to be incorporated in the building at the site.

★ The designers of houses will continue to produce more livable and efficient environments as their knowledge of space relations grows; and the performance of materials and equipment proves their relative desirability. They will make intelligent selection from the many diverse materials and conveniences that will be offered in a competitive market, and will assemble them to produce the desired result—a better, more economical, more convenient and trouble-free home.

★ In appearance the houses will reflect the desires, tastes, associations, prides and prejudices of their owners for they will satisfy not only the physical requirements, but the psychological proclivities of their possessors. Radical experiments and designs will continue to intrigue those who want to be in the vanguard of progress. Conservative designs, reflecting the best of the past, will be built to please those who prefer the familiar. Mobile houses, or trailers, will be available for migratory families.

★ The house of the future will still be a house. It will still be subject to the whims of the public, to the development of manufacturing procedure in a competitive market, and to the intelligence and daring of the designers.

Kenneth K. Stowell

EDITOR-IN-CHIEF

Cushing-Gellatly photos

THE HOUGHTON LIBRARY OF RARE BOOKS

HARVARD UNIVERSITY, CAMBRIDGE, MASS.

PERRY, SHAW AND HEPBURN, ARCHITECTS

GEORGE A. FULLER COMPANY, BUILDER

In many respects this library, which was awarded the Harleston Parker Gold Medal, is unique. Designed primarily for the exhibition of an invaluable collection of rare books, the library naturally had to provide for their preservation and safekeeping. For this reason it is air conditioned throughout, with constant temperature and humidity maintained, and the air kept dust-free at all time. Yet nowhere do the mechanics of it obtrude.

The architects had the dual problem of attuning the design of the building not only to the diverse scale and style of the neighboring buildings, but to the character of the great collection of rare books which represent the backbone and lineage of English literature. In design, scale, and style, it reflects these considerations. In construction and mechanical equipment it embodies the most modern scientific advances.

The exterior is of a specially burned brick, Flemish bond, laid with particular pains, with trim in Rockwood stone. The structure is steel framed. The new building is connected to Harvard's Widener Library, by both an unobtrusive bridge and an underground passage. On this side, the building is a story higher than on the front, because of the slope of the site.

A glance at the plans will show the simple, functional arrangement of the rooms and services. The large oval lobby invites the study of the collections in individual panel cases designated by the name of the author or the particular subject.

At the left of the lobby is the large Exhibition Room; at the right, the Reading Room. The architectural treatment of the Exhibition Room is retiring and appropriate, painted a neutral blue-green which contrasts pleasantly with the vellum-covered books displayed in the panel cases. The books are beautifully illuminated by hidden Neon fluorescent tubes. This relatively "cold" light is dispersed through louvered glass sheets, and reflections are avoided by sheet steel shields. The lighting is thus emphatic but not theatrical. Direct lighting of the room itself is provided by the two large brass chandeliers, and there is indirect lighting from their bowls, with controlled intensities.

The bookcases are highly interesting in their design. There is space of one inch between the back of the bookcase recesses and the wall to allow for the circulation of air. The warm transformers for the Neon lights are placed in accessible panels above the shelves to induce a gradual circulation of conditioned air up through the exhibits from the baseboard grilles. The air is made dust-free by the ionizing process as it enters the building, and temperature and humidity norms are controlled to remain absolutely

The central circular stairway to stacks and second floor

The oval Lobby, with its displays of special collections, is finished in the warm ochre of vellum, heightened by lines of gold

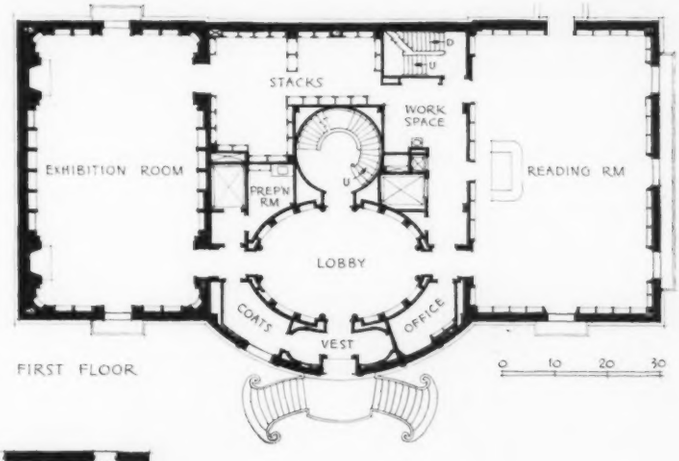
The Exhibition Room with its well-lighted bookcases

steady, and independent of all external climatic changes. Air quantities and velocities are carefully controlled and condensation is non-existent. All gaseous impurities which tend to discolor leaves of books are removed from the air by passing the filtered air through metal absorption-canisters perforated and filled with activated carbon.

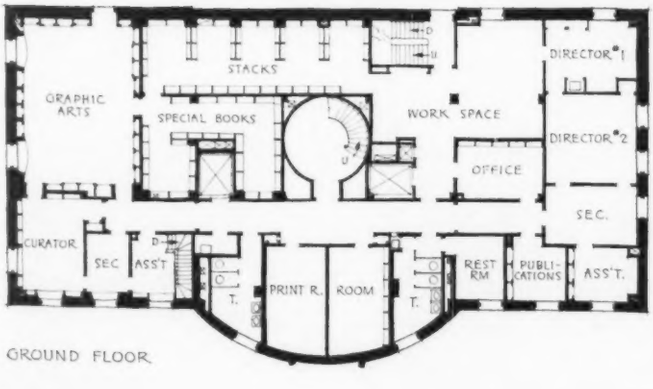
The Reading Room at the right of the lobby is designed for the study and examination of the valuable books and manuscripts. Entrance and egress doors are controlled by push buttons on the librarian's desk. The room is lighted especially for reading, and is also substantially sound proof. Walls and floor are cork and the ceiling is of limpet plaster. The bookcases are of convenient height and the walls above the bookcases are of sound-absorbing cork. The room is simple, quiet, light, air conditioned—admirably suited to its purpose.

There are also special study rooms elsewhere in the building. We show a photograph of the John Keats Room which houses a special collection of his works. The room is done in rich Virginia walnut, and has a tray ceiling.

The Reading Room is simple, functional, quiet, comfortable; floor and walls are of cork, and the ceiling is acoustical plaster



FIRST FLOOR



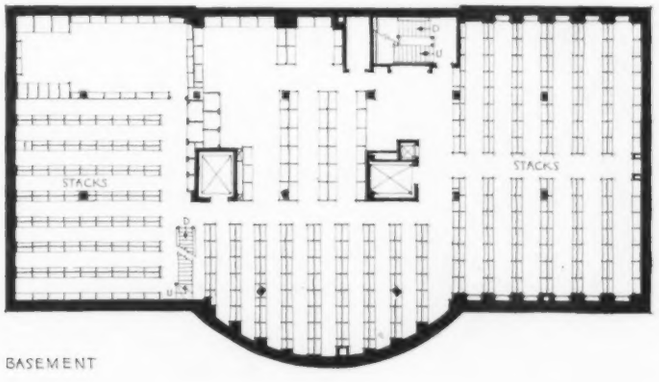
GROUND FLOOR

The John Keats room, finished in Virginia walnut, displays a priceless collection

The grilles above and below the bookcases are the only outward evidences of the carefully worked out air conditioning system. The Graphic Arts Room, while quite different in treatment and feeling, is especially appropriate to its use.

The stacks were studied with extraordinary care. Their design eliminates completely any possible damage from metal fastenings or obstructions although the shelves are all adjustable. The fluorescent lighting has been carefully calculated to provide full illumination of all the shelves. The fluorescent lights are provided with crescent vanes, which not only obviate any glare but provide for the proper distribution of light throughout the stacks.

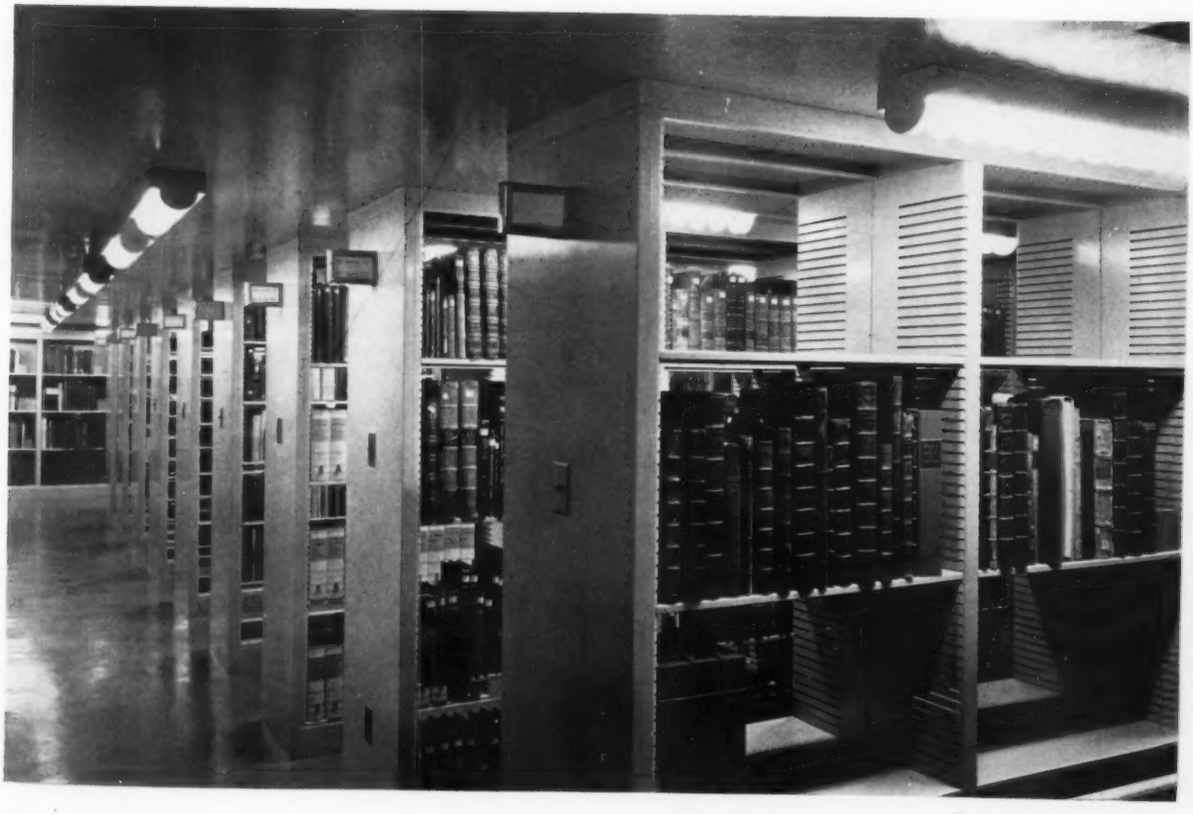
The new building was the gift of Arthur Amory Houghton, Harvard 1929, who is not only a bibliophile but a learned book collector.



BASEMENT

The Graphic Arts Room

The well-lighted Stacks



A MILLION HOUSES — MORE OR LESS

By ROBINSON NEWCOMB*

The potential market for postwar houses is two-fold. The firm demand, arising from new-family formation, gives out short of a million-unit yearly volume. Beyond that it is a replacement market, which calls for strong sales efforts

CURRENT building estimates for "after the war" are the brightest in our history. If these estimates are correct, and are properly interpreted, then the building industry can indeed look forward to a handsome future.

The crux of the matter lies in the enormous difference between the kind of postwar market that can be found simply because it will already exist, and the kind that will have to be made. The first kind is housing for new households, the second is *re-housing* for existing families. Both kinds are ordinarily lumped together in generous estimates, but they are as different as a child and its parent. The latter continues on a fairly even keel, but the former contains the capacity for development.

Let us examine the figure of 1,000,000 dwellings a year. The reason for choosing this figure is the frequency with which it is quoted as the expected postwar residential volume. Some authorities go far higher, to 2,000,000; others fall slightly below, at around 900,000; still others say a million and a quarter. The combined effect of all these estimates is to make 1,000,000 dwellings a year seem very safe as a prediction. Unwary optimists are thereby led to wait in the belief that a million dwellings a year will fall into the building industry's lap, but this interpretation is very far from what the predicters themselves probably intended.

Actually, if we look into the posited 1,000,000 dwelling market, the ready part of it—the part that can be called the firm, highly predictable part, the part based on *new-family* need—amounts to less than two-thirds of a 1,000,000 units a year. It can be estimated at between 560,000 and 640,000 dwellings. The calculations that lead to this result are given on adjoining pages. It is optimistically assumed as a basis for these calculations that the war ends by 1945, that casualties are not excessive, that there is prosperity, and that an even keel is reached by 1950. And yet, on these optimistic assumptions, a volume of 640,000 dwellings a year is the most the industry can count on to meet a ready-made demand. The industry must work for the rest. In other words, even though a total annual volume of 1,000,000 dwellings a year is fully possible, yet in order to reach this figure, the industry must first satisfy the new-family demand in full, and must thereafter dispose of half again as many dwellings among households that are already sheltered. Less than two-thirds of the million is *new-family* housing; more than one-third is *re-housing*.

Basically the fact that ready-made demand arises only from new households is quite simple, however much it has been obscured in practice. Confusion has arisen because in the past it was rarely the new family that stepped into the new dwelling. Usually the new household was a young family which waited to move into a dwelling which had just been vacated, when the previous occupant moved into something new. Nevertheless by so doing, it was the young family—the new household—which created the demand. The moment there is no new household either demanding a dwelling of its own or waiting to move into an older dwelling that has been abandoned for a new one, then any building which is done, is done not for new-family housing but for re-housing. The abandoned house is then a potential derelict; if not that house, then some other house will be left empty somewhere along the line. To make the story short, re-housing cannot go forward on a large scale unless it is coupled with an orderly process for speeding depreciation, obsolescence, and demolition.

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If our estimates are reasonable, then any argument for building more than 2.8 to 3.2 million dwelling units during 1945-1949 must rest on re-housing and not new-family housing. This could be based on the premise of social need rather than market need; or on the premise that the building industry can make new dwellings attractive enough so that present occupants will move into them in preference to old ones and also in preference to buying a new car, airplane, helicopter, or trip abroad; and that the industry can at the same time devise speedier and more orderly means of depreciation for older properties, looking toward the demolition of the older dwellings. If we are willing to accept depreciation as the price for developing the replacement market, then the market for dwellings in the postwar decade can be made several times as great as the market for new households.

* An abridged version of a study prepared in collaboration with Max R. Bloom.

An Estimate of New Postwar Dwelling Needs

The predictable part of the postwar dwelling market is that created by new households. New households grow, not with the population as a whole, but with the age groups which form families. Thus an increase or decrease in the number of children, for instance, has little immediate effect on new households; but the changes in the number of youths attaining the age of twenty-five has a great effect.

Fortunately, population growth in general can be predicted in peacetime by an exact technique. The forecasts of the National Resources Planning Board and of the Scripps Foundation were well borne out by the results of the 1940 census. On the other hand, the forecasting of household formation is more difficult, involving as it does more variables, such as family income; this depends on prosperity. How to foretell the degree of approaching prosperity has unhappily not yet been discovered. Despite this difficulty, the limits of error are not great. A forecast made by the Department of Commence staff missed the 1940 census household figure by less than 0.6 per cent; that is, the forecast was 99.4 per cent right. On the basis of past experience, the forecasts of household formation for the 40's may be accepted with confidence. The adjustments made herein are based on the convenient assumption that the war will be over by 1945 and that casualties will be moderate. Should these assumptions prove too optimistic, our estimates will have to be revised downward.

The highest estimate for the number of non-farm households in 1950 is 32.3 million, an increase of 4.6 million above the 1940 figure of 27.7 million. It involves, apart from other assumptions, the view that the war will not reduce the number of households to be found in 1950, because its first phase stimulated marriages. The sharp drop in household formation since 1941 makes this prediction look somewhat optimistic.

The anticipated increase of possibly as many as 4.6 million households from 1940 to 1950 is one-sixth less than the 1920-1930 increase and is only slightly in excess of the 1930-1940 increase of about 4.5 million households. The peak of household formation was actually reached in the middle twenties, when the rate in excess of 600,000 per year was attained. The average for the decade was 550,000 per year. During the 1930's the average dropped to about 445,000 per year or 19 per cent below this. Part of the drop was due to a smaller number of people entering the age at which families are formed, part was due to postponement of marriages, part to the lowering of incomes. Most of the loss of the thirties has now been made up. An examination of the figures shows that the marriage rate declined right after 1930, but started to climb a little later and went up faster than income. It appears that a change in income has an immediate effect on marriage plans but that in time an adjustment is made to changed circumstances and the permanent effect is less than might be expected.

This is mentioned because some have argued that the standard of living will involve a sustained increase in household formation. A raised standard of living will reduce doubling and it will increase marriage somewhat for a short time, but beyond that it will have relatively little effect on the total number of households.

II

Along with the problem of the postwar volume there is a problem of the postwar price range. It can be predicted either on the basis of full employment and prosperity, or on the basis of moderate prosperity, or on the unlikely basis of depression.

ESTIMATED POSTWAR DWELLING NEEDS

(In Millions of Units)

1. Number of non-farm dwelling units, 4/1/40	100.0%	29.683	
2. Occupied	93.5%	27.748	
3. Vacant, for sale or rent	4.8%	1.429	
4. Vacant, not for sale or rent	1.7%	.506	
5. Number of non-farm households, 1/1/40		27.7	
6. Maximum increase in non-farm households, 1940-1949		4.6	
7. Total non-farm households, 12/31/49 (5+6)			32.3
8. Units vacant, for sale or rent, 12/31/49		.5	
10. Total units required, 12/31/49 (7+8+9)			34.5
11. Number of non-farm units, 1/1/40		29.6	
12. Additional net number of units required, 1940-1949 (10—11)			4.9
13. Net units added, 1940-1944			2.4
14. Net units required, 1945-1949 (12—13)			2.5
15. Possible FPHA demolition		.4	
16. Fire, catastrophe and non-FPHA demolition		.3	
17. New construction required, 1945-1949 (14+15+16)			3.2
18. Total new units required, 1945-1949 assuming no FPHA demolition (21—19)			2.8
19. Total new units required, 1940-1949		5.6	
20. Total new units required assuming no FPHA demolition		5.2	

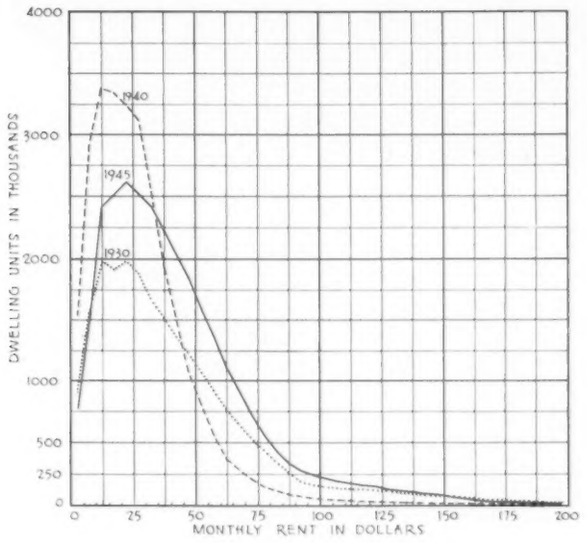

CHART I: Distribution of old and new non-farm dwelling units by rental price classes. The 1945 curve is an estimate by S. M. Livingston, Department of Commerce, and is based on the assumption of a high level of postwar prosperity

As a point of departure, Chart I shows three existing curves of price distribution covering dwellings both old and new. The dotted line represents the rental value of all non-farm dwellings reported in the 1930 census. The dashed line represents the distribution of rental values represented by the 1940 census. The solid line represents the rental distribution suggested by Mr. S. M. Livingston of the Department of Commerce, as the one that might apply to all dwellings in 1945. Mr. Livingston's curve is similar to the 1930 curve, except that he assumes a smaller percentage in both the very low price range and the very high one.

The Livingston curve may be taken as an approximation of the general conditions in 1950, supposing there is high prosperity; or the 1940 curve may be taken, supposing there is moderate prosperity. That is, the Livingston curve might roughly fit 1950 providing that there is no change in the general price level, that the period of 1945-1950 is one of full employment and high prosperity, and that the percentage of income going into housing needs is as high as it was in 1930.

The 1940 curve represents the price distribution of dwellings as reported by the census after a short period of moderate prosperity. This curve may therefore approximate the general price distribution of all dwellings in 1950, if the latter half of the decade proves to be only moderately prosperous, and if the proportion of income that goes into housing in 1950 is no higher than it was in 1940. Even under conditions of high prosperity the 1940 curve might approximate the conditions of 1950—if competition were sharp between housing and other commodities such as cars, television sets, airplanes, or helicopters.

New building goes forward at higher price ranges than obtain in the dwelling field as a whole. Chart II is worked out to show possible rental values for the 3.2 million new dwellings that will be required between 1945 and 1950 under our general assumptions. The solid line is drawn at high prosperity level; the dashed line at medium. No curve has been drawn for the supposition of a depression.

No matter at what prosperity level the curves are drawn, newly built dwellings have a higher average than the general level—but not too extensively so. The higher price is due to the fact that new dwellings are more frequently built for occupancy by households already established and secure. New households are more likely to start out in used dwellings. Nevertheless this assumption can be carried too far. It was carried too far in the twenties, when new households were ignored in new building, being expected to resort to the used market altogether. Over that period as a whole, the volume of new dwellings was geared to the growth of new households; but the price range was geared to replacement standards obtaining only among the well-to-do and well established. The result was that new neighborhoods were created at the expense of old neighborhoods; more costly houses were built than could be maintained, forcing down older costly houses in price. The result of this forced depreciation was that although the value of new dwellings produced was heavily weighted toward the high-priced side of the curve during the twenties, nevertheless nearly 80 per cent of all properties reported by the 1930 census were listed at a rental value of less than $60.

If new dwellings in the years 1945-1950 were once more to be built in such expensive brackets, and new households cared for only in hand-me-downs, a similar distress could be brought about again. But we have learned that there are other ways of caring for new families than forcibly depreciating a too-high-cost property till it fits their modest budget.

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No matter how one looks at it, there is a distinct top limit to the prices that new building will be able to command. Under no circumstances is it to be assumed that more than 21 per cent of the properties to be found in 1950 will rent or sell for the equivalent of over $60 per month. If the years 1945-50 should be years of moderate rather than high prosperity, and if a smaller proportion of income were to go for housing than has been the custom, it might mean that only about 11 per cent of the newly built houses would meet a demand of $50 or over,

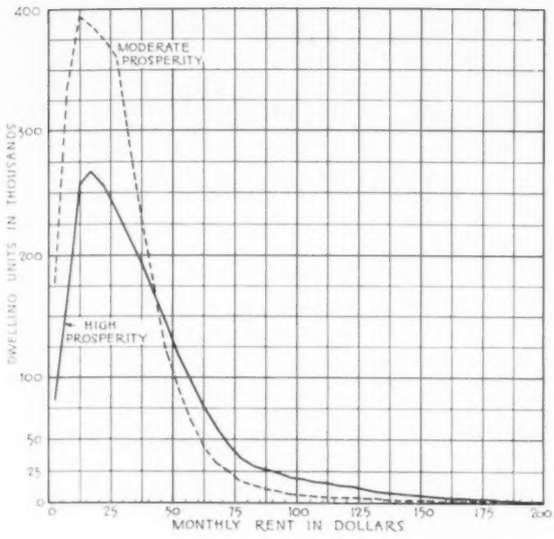

CHART II: Possible distribution, by rental price classes, of the 3,200,000 new dwelling units estimated to be needed for new families between 1945 and 1950. The solid line assumes a high prosperity level, the dashed line a more moderate level

that 48 per cent of the new units would have a rental value of $20 to $50, and that 89 per cent would be in the less-than-$50 group. High prosperity might raise the $50 group from 11 per cent to 30 per cent; even so, the market's emphasis on the low and moderate income groups may disappoint optimists looking for the easy break into a revival of the high-cost business.

III

Apparently the one way to secure the larger postwar housing volume would be to supplement new housing with large-scale rehousing. If the market is to reach a million units a year, re-housing must make up more than a third; if two million units a year, more than two-thirds. All this rehousing must replace units already occupied, and must result in demolition of a nearly equal number.

Such an assignment puts it squarely up to the industry. The work involved is much harder than caring for an automatic increase. It demands the utmost in making housing the new romance, creating unprecedented attractiveness, with unexampled efficiency, perhaps through prefabrication methods; adapting land policies to easy cheap acquisition, considering policies leading to subsidy or government demolition, framing schemes of joint participation among owners, so that the cost of demolition falls on all alike; adapting financing methods to quick depreciation and scheduled demolition as a part of the progressive rotating scheme.

The question as to which methods should be chosen lies outside the scope of this paper. It is certain that the *need* for replacement or re-housing is at hand, if the industry can devise means for turning the need into an effective demand. Thus the census of 1940 reported more than 3.9 million non-farm units in need of major repairs, including over 2.6 million units without private bath. If these were replaced over a period of ten years, they would provide a market three-fourths as large as that created by all new households in the decade following the war. Again, it is estimated that by 1945 there will be about 7 million non-farm units with a rental value of less than $20 per month. If these may arbitrarily be presumed to be sub-standard or undesirable, a replacement market for 700,000 units a year can be created throughout a decade. A shift in income caused by a high level of economic activity would tend to shift demand from units in the group below $20 to the group between $20 and $50.

In 1945 the number of families in the $20 to $50 group for whom re-housing might be undertaken will number about 13 million. About 5.5 million will own their own homes, so that a really decisive improvement in housing values will be required to interest them. Eliminating them from the picture entirely still leaves about 7.5 million units in this price range. Any combination of devices attractive enough to secure re-housing of these 7.5 million families in a decade—as automobiles have been replaced every six or seven years—will add an annual market of 750,000 units. If all in the group were re-housed in a decade the annual market would average 1.3 million.

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In all plans for a balanced national program of full employment, residential construction has played an important part. During the peak years, 1923-1927, residential activity accounted for as much as 45 per cent of all construction activity including utility expansion. During those years, new residential units were started at the average rate of 870,000 units a year. In 1925 residential units were added in the number of 935,000. In recent years, this was most nearly reached again in 1941, when 715,000 units were started in non-farm areas. But even in the immediate postwar years, the predictable firm solid demand represented by new households will not exceed 600,000 a year.

Under such conditions those who talk in terms of 1,000,000 or 2,000,000 dwellings per year over a period of one or two decades as a new-family demand are indulging in wishful thinking. Though such a level would help maintain full employment, it would be higher and more sustained than any we have yet known. In fact, it would *re-house* America in from 15 to 30 years.

The old frontiers caused by expanding populations are most easily conquered. New markets can be created by the initiative and skill of the industry, and its willingness to tackle new frontiers. The new frontier is that of raising standards by replacing the old with the new.

PREFABRICATORS VIEW THEIR FUTURE —AND THE ARCHITECT'S

WHAT DO PREFABRICATORS THINK of their own future, and of the future place of architects in the much-heralded industrialized housing?

Well, the prefabricators are pretty optimistic about both parts of the question. Their opinions, recently recorded in replies to an ARCHITECTURAL RECORD questionnaire, indicate that they expect prefabrication to account for a sizeable proportion of houses built in the years immediately following the war. Also that architects will find much they can do in the manufacture and distribution of factory-made houses.

One would expect the prefabricators themselves to speak optimistically about the future progress of prefabrication. But, as one observer has pointed out, they are the ones who have invested their own money and effort, and they could be expected also to be realistic. In the RECORD's tabulation of the questionnaire replies there was evidence of both optimism and realism.

Necessarily, any such inquiry as this represents only opinions or guesses. Prefabrication is an infant industry. Though hundreds of interested parties can be listed, it can be taken for granted that only a small proportion are really well established, established to the point of a going business of any volume. In this respect the RECORD's data are based on a numerically small list of active prefabricators, but they can be accepted as a good representation of opinions of the active firms, for practically all of the "big names" of the industry answered.

The combination of optimism and realism is noted in the wide ranges in the replies. While a range of highs and lows is, of course, to be expected, it is a fact that should be noted.

The first question asked:

What percentage of the total number of houses built yearly in the U. S. A. do you believe will be PREFABRICATED HOUSES?

Answers were called for in two price classes, and for three periods of time after the war. The answers:

	Under $5,000	Over $5,000
The year after the war	25%	8%
Five years after the war	46	20
Ten years after the war	66	33

These answers are, of course, the averages. To show something of the optimism and realism, here are the extremes in the answers:

	Under $5,000	Over $5,000
The year after the war	5% to 70%	0 to 50%
Five years after the war	10 to 85	0 to 60
Ten years after the war	10 to 90	2 to 70

One of the replies raises a point that is always involved in prefabrication discussions—the extent of the prefabrication in the finished house. After "admitting" that there remain certain operations which the contractor can perform more cheaply on the site, the letter says:

"For question No. 1, our answer would be that economy and efficiency would dictate that a very large percentage, in fact close to 100%, of the houses both under $5,000 and over $5,000 should employ prefabrication to some extent even the year after the war; that the most important percentage to consider is the extent to which houses are prefabricated and, if we consider economy and efficiency, this will depend on how rapidly additional materials such as magnesium, aluminum, plastics and others find their way into the housing picture and create additional operations which can be done more economically in the factory than at the site. We believe the time will come relatively soon when all building will be planned to use prefabrication to a certain extent. We admit that some day houses may be completely prefabricated and come off an assembly line like typewriters and automobiles, but such an operation will be economical only when the variety and type of materials increase to the point where there remain no operations which can be performed more efficiently or quickly at the site."

As for the architect, the second question, and its answers:

Do you see a place for architects in the field of prefabrication?	**YES 100%**	**NO 0%**
If so, in what capacity?		
As designers for the manufacturers	90%	10%
As site planners	100	—
As construction superintendents	39	61
As dealers	23	77
As salesmen	39	61

There would seem to be no question that the prefabrication industry expects to make use of the architect's talents. Still more specifically, Question 3 asks:

Do you now employ architects? How many?
Answers: YES 90% NO 10% Average number of architects employed by each firm, 3.5

And Question 4:

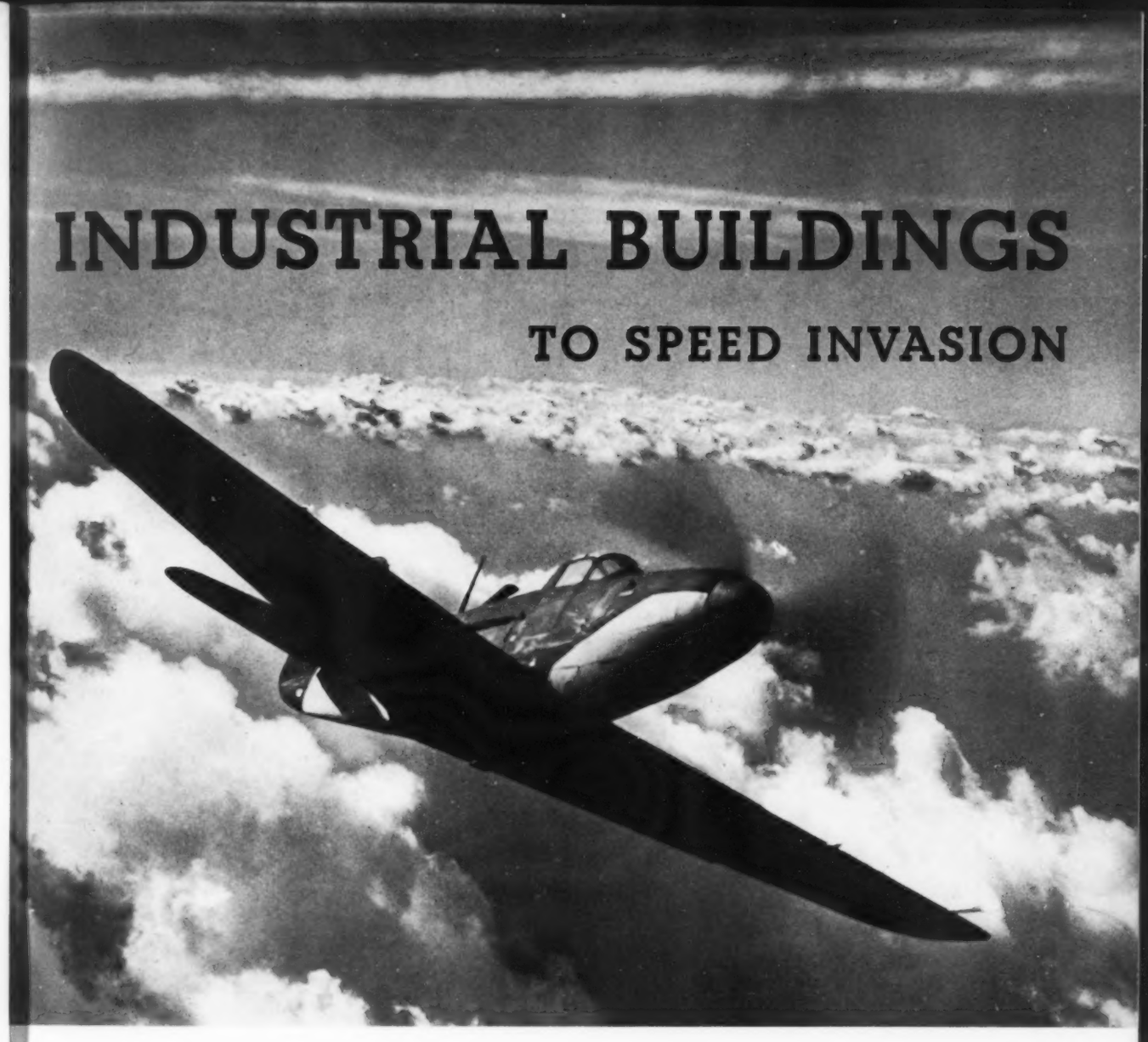
Do you expect to employ any architects in the future?
Answers: YES 93% NO 7%

One well known proponent of the completely prefabricated house wrote:

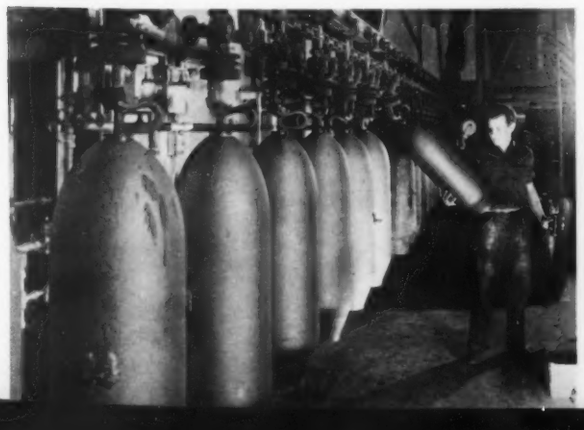
"I see room for 50,000 architects in this industry after the war. . . . We will employ thousands if they will retrain themselves. . . . Men of architectural training must be retrained to fit into mass-production-mechanized operations."

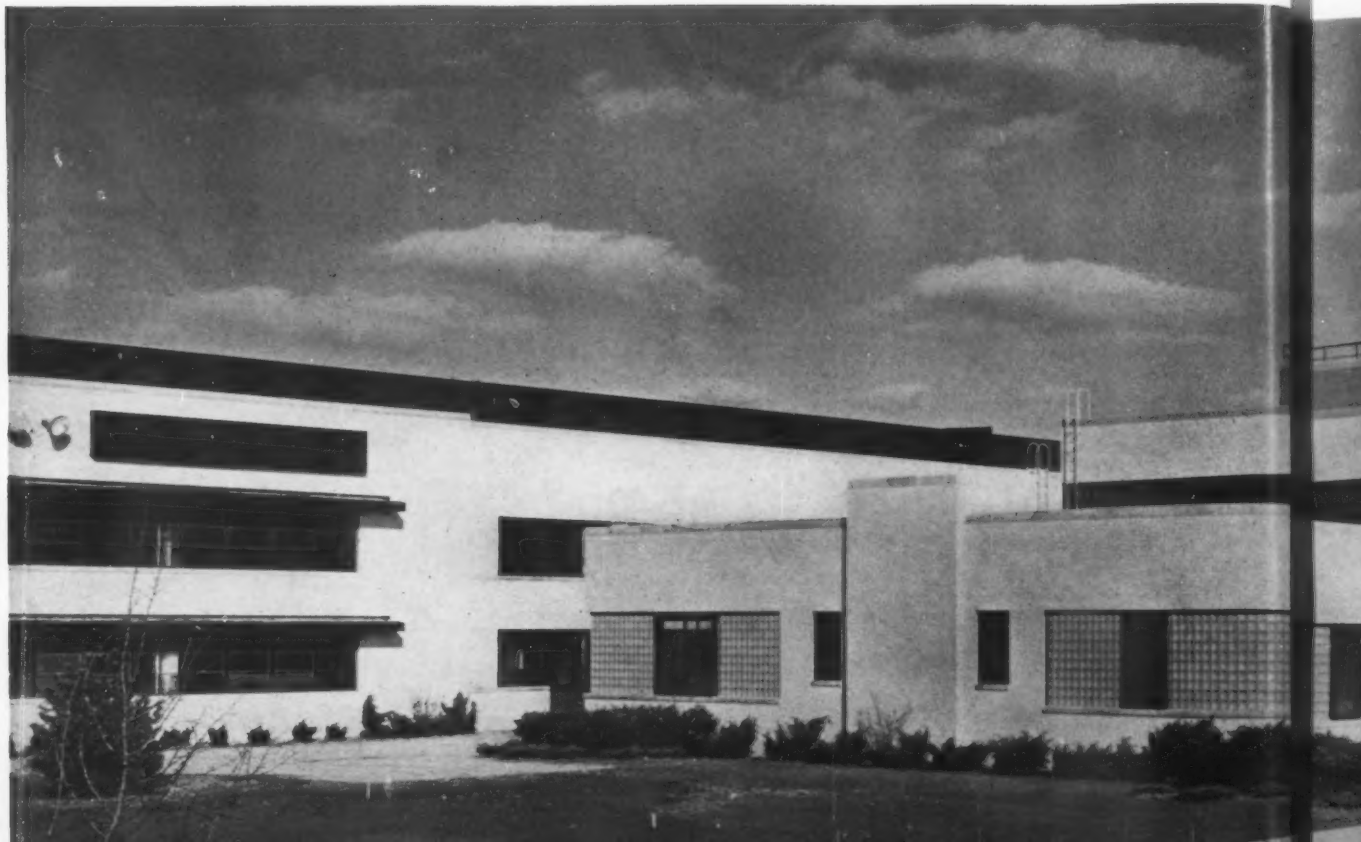
INDUSTRIAL BUILDINGS

TO SPEED INVASION



As THE WAR has moved toward an invasion climax, its changing needs for weapons have been reflected in the design and equipment of the later factory buildings. Speed in design and erection is already an old story, also the saving of critical materials, but these factors were certainly no less vital in the three plants here shown. Especially interesting in these buildings are the demands of the processes to be housed—final integration of an intricate assembly line for making Airacobra fighter planes; material-handling in a bomb factory; and the peculiar lighting and air conditioning requirements of an unnameable plant making precision instruments for aerial warfare.





FACTORY FOR FIGHTER PLANES

WITH THE COMPLETION recently of a considerable addition, including an office building, the Bell Aircraft Corporation's new plant now has completely integrated facilities for producing the fighter planes so necessary to a successful invasion.

The new production area completes a basic layout for the final assembly plant, which was designed and authorized before the restrictions on metals. Mezzanines run the full length of the plant, and parts and subassemblies produced on or below them are fed to conveyorized assembly lines extending through the central area.

Columns are spaced 25 ft. apart along the length of the building with spans ranging from 50 ft. in the new portion to 100 ft. in the original plant. The factory buildings are of steel frame construction with 5-in. reinforced concrete floors.

The exterior treatment of the new office building and of the plant additions conform to the original styling. The office building exterior is buff face brick. The limestone sills and copings emphasize the horizontal bands formed by the strips of windows and glass block. The darker tones of the windows are further emphasized by metallic heat reflecting screens. The darker brick used to intro-

PLANT FOR BELL AIRCRAFT CORPORATION; THE AUSTIN COMPANY, ENGINEERS AND BUILDERS

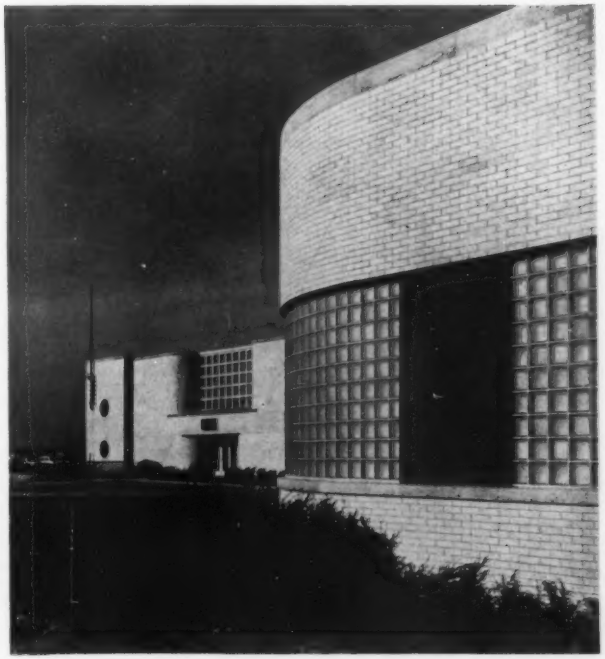
duce contrast in the sidewalls at the entrance is carried throughout the monitor section, which houses a large drafting room on the second floor.

The drafting room consists of a standard monitor cross-section superimposed on a one-story flat roof structure. The monitor section is completely enclosed by a band of glass block, with heat-intercepting block on the south and west sides.

All offices have acoustic plaster ceilings and green metal partitions, which conform to color specifications carefully worked out for the plant. The wall color is a "cool green" made somewhat on the yellow side to relieve eye-strain. The floors in this section are red and brown asphalt tile, these colors being selected to provide a relaxing combination.

Color experts specified a light terra cotta at the opposite end of the color prism for use on three walls of the cafeteria, believing that the complete change would give employees mental and physical relief. The fourth wall of the cafeteria is cream colored ceramic tile, behind the serving table.

The cafeteria has been designed to accommodate groups up to 500 for motion pictures. A projection room at a



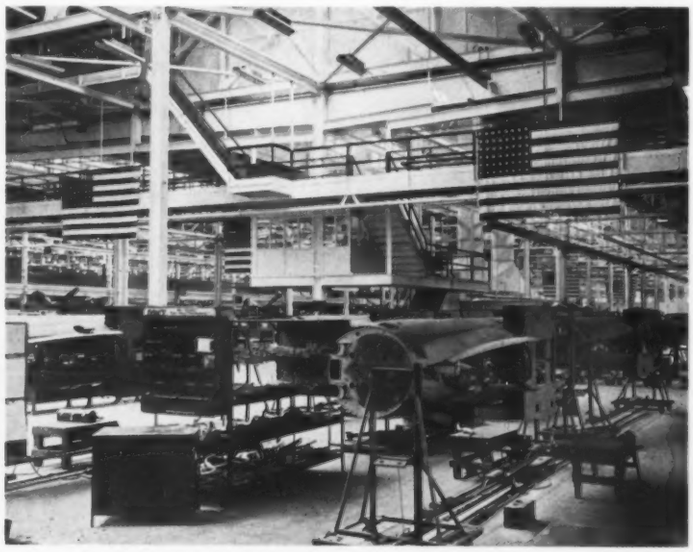
Above: conveyorized assembly line in new plant

Below: subassembly areas feed the central line

Below, right: overhead production control office

corner location is so arranged that it can be used both for the cafeteria and for a small adjoining room for executive showings.

Many employees' facilities—two lunch rooms, kitchen, locker rooms, toilets, and a service store—are concentrated along an 18-ft. underground corridor. Most factory employees enter through this special corridor to locker rooms and from there to working locations via stairways at inter-



Above: reception lobby of the new office building

Above, right: the lofting department on mezzanine

Below: the drafting room, above the main offices

vals along the corridor. Here cream-colored tile walls and a white ceiling with recessed lighting give an effect of spaciousness.

Lighting in the office building is entirely fluorescent. Continuous fixtures provide 50 foot-candles in the drafting room and individual fixtures give 35 foot-candles in the first floor offices. Lighting in the factory sections is of several types. In the main assembly bay 400-watt mercury lights alternate with 1,000-watt filament lamps in

prismatic glass reflectors. In the daytime, the monitor sections also add daylight, the combination providing a minimum of 40 foot-candles.

Lighting controls are coupled with a system of photo-electric cells which turn on the lights when daylight falls below a given level. The plant has an emergency lighting system served by a 175 kw. gasoline-driven generator.

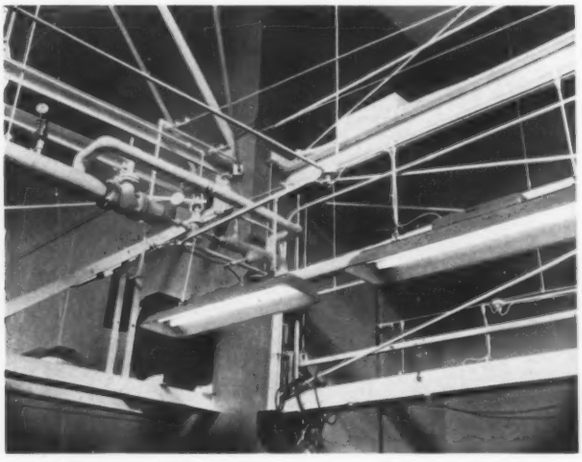
In the plant proper, everything above a steel gray dado has been spray-painted with a single coat of eggshell white. This minimizes consciousness of unit heaters, conveyors, pipe, etc., and has the general effect of raising the level of illumination throughout the plant.

Fire-signal, air-raid-alarm, sprinkler-supervisory, and compulsory watchman's tour-key systems are all electrically connected to a central control desk. Automatic highway-traffic signals installed at the main gate and at the employment building gate have directional detectors as well as manual pushbutton conrols.

Heating systems throughout the plant with the exception of the office building, consist of 100-lb.-per-sq.-in. steam supply system, unit heaters, convectors, traps, condensate pumps, etc. Many of the unit heaters are arranged so that they can handle outside air or recirculate air from the building.

The integrated layout includes a large production hangar of timber construction, with overhead doors enclosing two sides. This hangar is equipped with monorail facilities and has a large open paint-spray floor located above an open steel grille which exhausts 160,000 cu. ft. of air per minute.

Another hangar building with unobstructed area 200 ft. square adjoins the shipping building where planes are taken apart after testing, and crated for shipment abroad. This structure has an interconnecting network of overhead monorail cranes which expedite the handling of propellers, fuselages, and wing sections, as well as lumber and crates, so that the finished fighter planes can be speedily started to their mission in faraway parts.



Overhead piping is painted white to minimize its visibility

The cafeteria, in the office building, is also used for movies

A typical basement locker room with lunch and game tables

The main dispensary area of the plant's medical department

Kaufmann & Fabry photos

ASSEMBLY LINE PRODUCTION OF AERIAL AMMUNITION

FACTORY FOR MECHANICAL HANDLING SYSTEMS, INC.

JOHN CROMELIN, ARCHITECT.

CLEARING HOUSE INDUSTRIAL DISTRICT, INC., CONTRACTORS

As THIS PLANT was built to help fill the need for more and more aerial bombs, speed was the principal design factor. Although minimum use of critical materials was another factor, the first consideration was materials that could be gathered most quickly. Thus, for example, the use of fabricated steel that was already on hand. Floors are reinforced concrete, and the roof structure is of wood.

Aside from the office building in front, the plant is a high one-story structure designed around an unusually complete system of conveyors. The office section has the strength for a future second floor, and the entrance design was worked out with that in mind.

The conveyor layout in the plant represents the conversion to direct ordnance work of a manufacturer of conveyor equipment. Mass production layouts are the company's business, and in this case it took its own medicine. Accordingly, the conveyorized system is highly developed. One result is that a higher than normal percentage of women could be employed and the output per worker is said to be high.

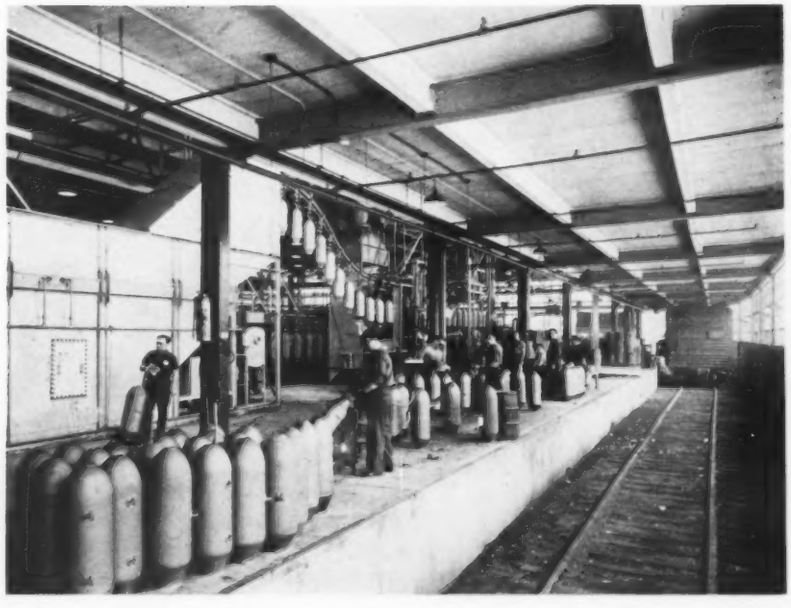
To speed the handling of incoming materials and outgoing ammunition, there are two separate switch tracks, one inside the building, one in the material yard. The one inside the plant is depressed below floor level, for maximum ease in loading.

The building is planned to take full use of daylight, with almost maximum window areas in walls and monitor roof sections. Steel sash is used throughout, some with clear glass, some with obscure. Night and supplementary lighting is supplied by incandescent lamps in dome fixtures.

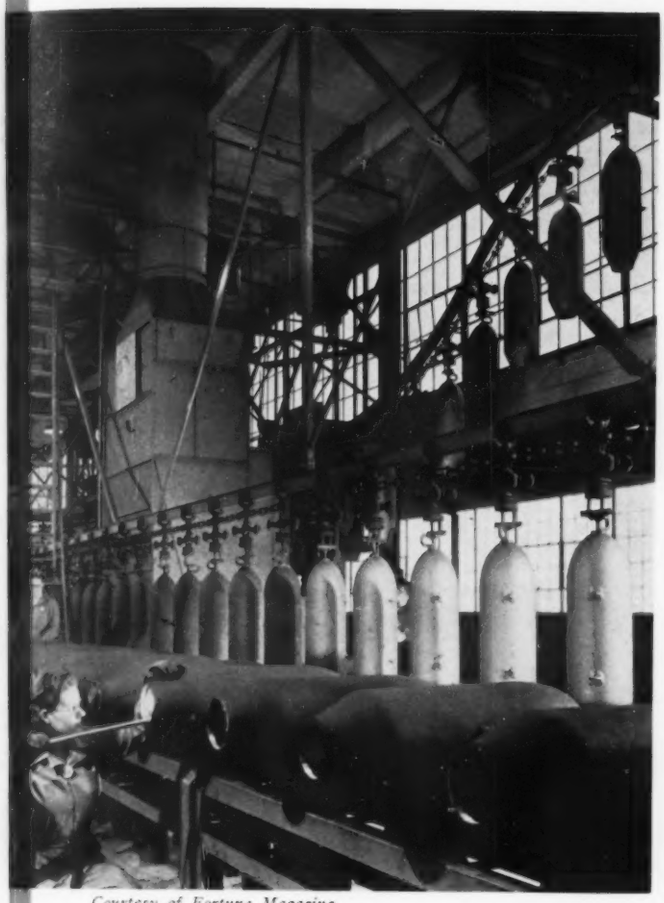
Heating is by steam, from oil-fired central boilers, circulated to overhead unit heaters.

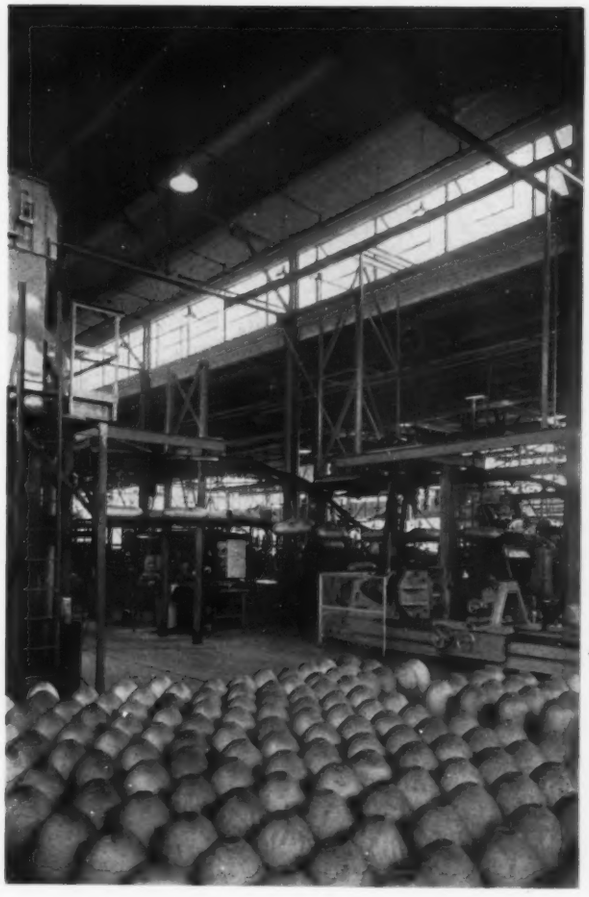
Factory and parking lot are so placed that the latter is available for future expansion; the plant can be doubled

Office building lobby has veneer walls, acoustic ceiling, linoleum floor, concealed fluorescent lighting fixtures



The inside switch track is depressed so that loading is done at floor level. Conveyors bring bombs to the platform

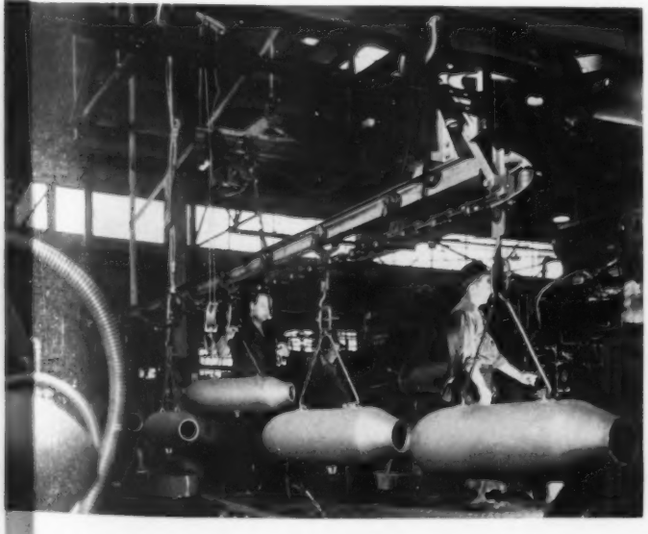


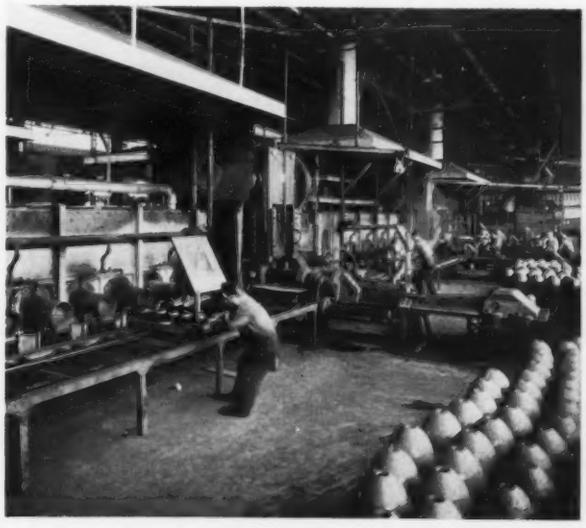


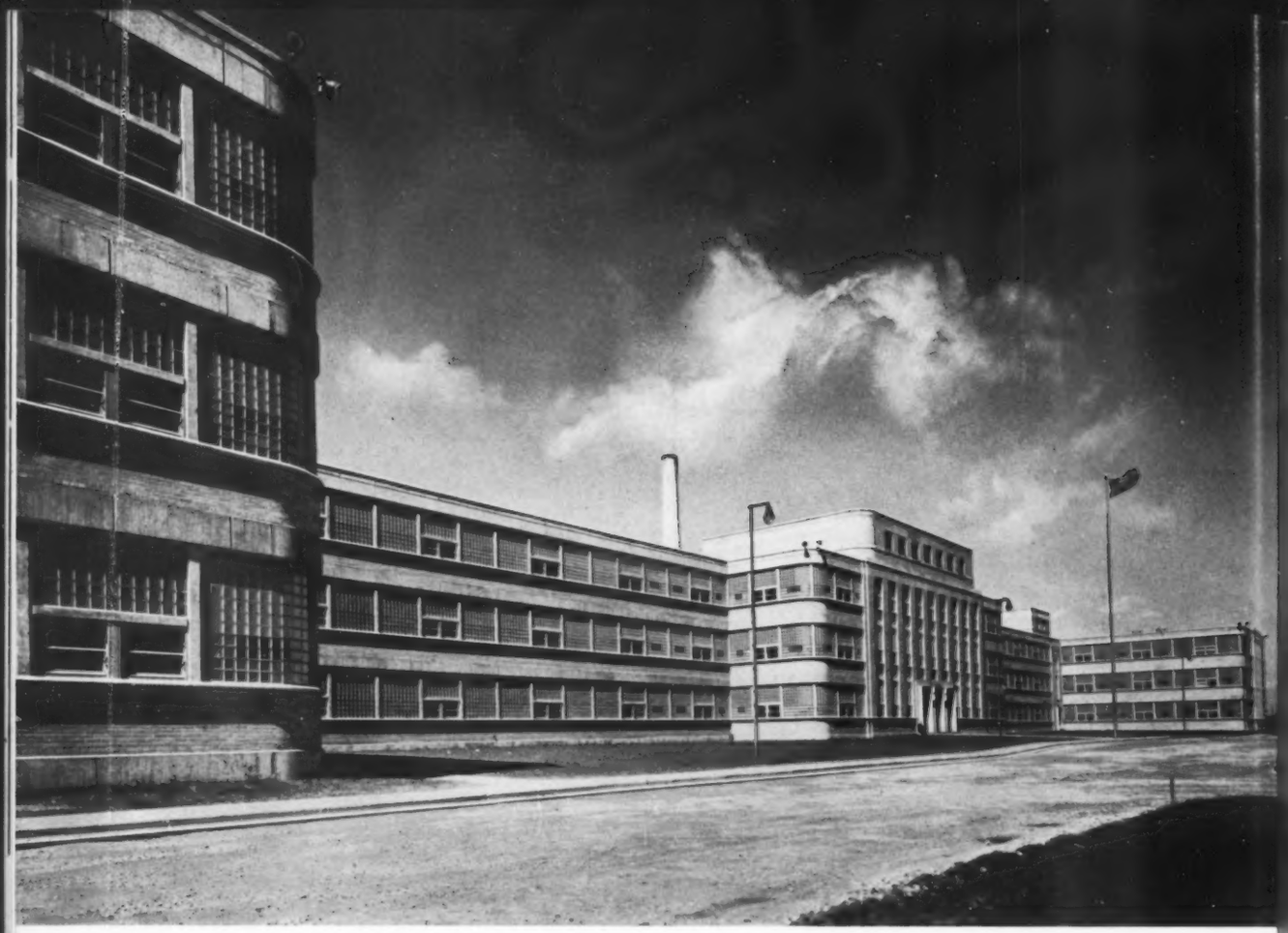
Courtesy of Fortune Magazine

With the heavy handling all done by mechanical equipment, women can be employed for jobs that would normally require men

Overhead chain conveyors make an intricate pattern of steelwork, but save much floor space that would be required for trucking







PLANT FOR PRECISION INSTRUMENTS

MUNDIE, JENSEN, BOURKE & HAVENS,
ARCHITECTS AND ENGINEERS

SAMUEL R. LEWIS,
CONSULTING MECHANICAL ENGINEER

DAHL-STEDMAN CO., CONTRACTORS

In combination, the critical materials situation and the need for precise control of atmospheric conditions and lighting produced some new ideas in this plant for the manufacture of instruments for aerial warfare. The result was an air-conditioned building of concrete, with many precast members, brick and glass block.

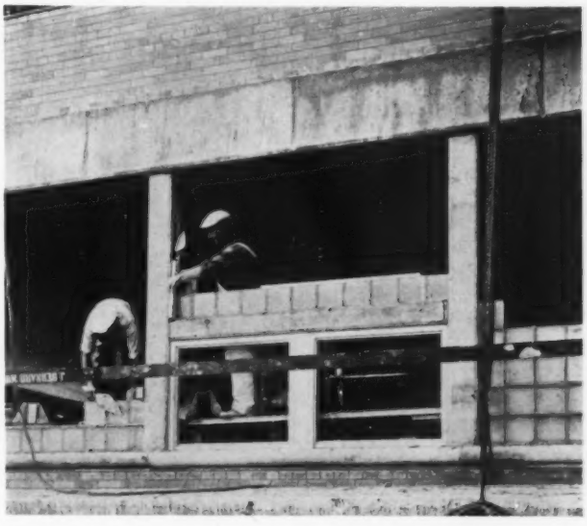
Elimination of dust and dirt was a major consideration in this combination of materials. That demanded complete air conditioning and exceptionally tight walls. The glass block provided the tight walls—some joints are varnished, such are the precautions against dust—and gave great areas to admit diffused daylight. This construction also contributes to the economy of the air conditioning system. Small window sections and panels of clear block permit workers to see out.

The use of precast concrete members was worked out to accommodate the glass block in speedy construction, with a minimum use of steel. The precast parts are the mullions and lintels over wood sash. The sills are stone and the spandrel beams and columns are poured concrete.

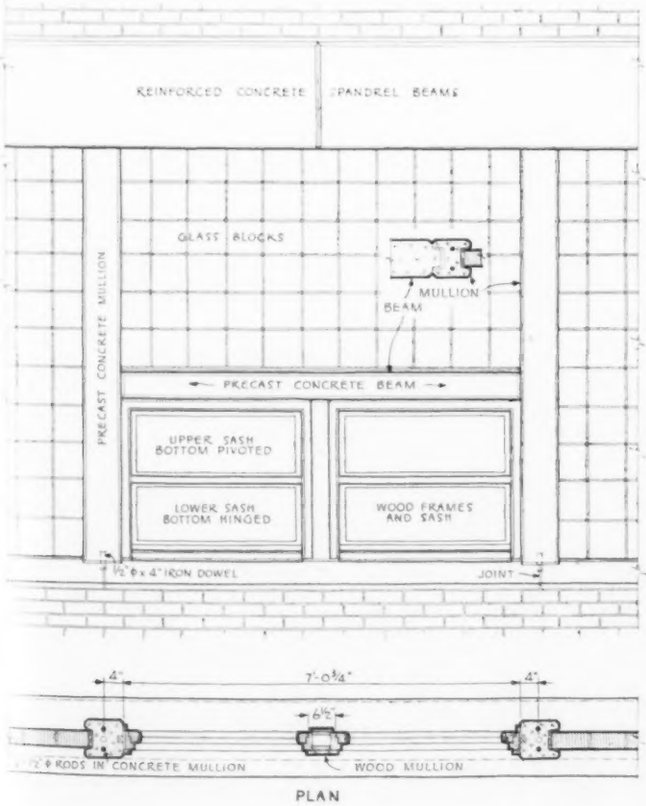
Air conditioning equipment is installed in penthouse locations. Corridor ceilings are furred down with 2-in. gypsum plank to provide air conditioning supply ducts. Grilles at top and bottom of corridor walls are the supply and exhaust openings, and the corridor itself serves as a return duct.

Acoustic material is used on the ceiling of all office sections and laboratories, but not in manufacturing areas. There the ceiling is the exposed flat slab of concrete, painted white. Floors in the office portions are of asphalt tile, in gray tones, with a brown border. Walls are of rough plaster, painted a cream color. Partitions in the manufacturing sections are of glazed tile, to prevent the gathering of dust, and they are varnished to keep down any tendency toward powdering.

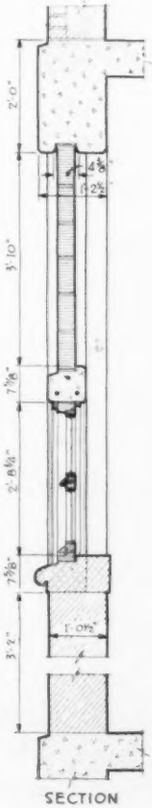
Lighting throughout is fluorescent, supplemented with localized lighting at workmen's benches.



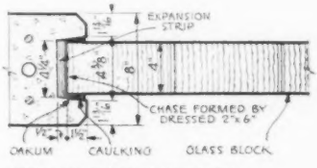
Precast concrete mullions and lintels (details below) were developed to speed the installation of large areas of glass block between stone sills and reinforced concrete spandrel beams



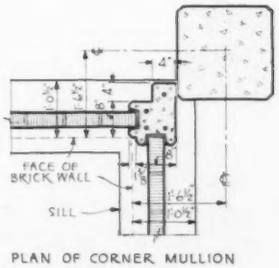
PLAN



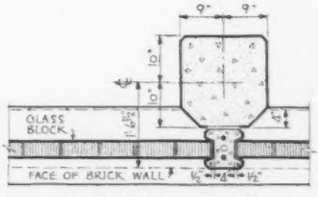
SECTION



DETAIL OF CHASE AT MULLION



PLAN OF CORNER MULLION



PLAN AT CONCRETE COLUMN

To subdue the appearance of the column, a desk was built in the corner, and column was furred out at the top to house a lamp

Small panels of clear glass block and small window sections give workers in offices and factory areas a chance to see out

Photo courtesy Curtiss-Wright Corp.

AIRPORTS

AIRPORTS OF THE FUTURE by J. Gordon Carr

TYPES OF HANGAR TRUSSES by Elwyn E. Seelye

A PERMANENT HANGAR FOR WAR PLANES

ARCHES OF LAMINATED WOOD

HANGAR DOORS THAT ROLL OR RISE

ARCHITECTURAL RECORD'S BUILDING TYPES STUDY NO. 79

AIRPORTS OF THE FUTURE

by J. GORDON CARR, A.I.A.

FLIGHTS of fancy do not make an airport. The finances and economics of the growing air industry will be determining factors in airport development. Mistakes in planning can prove exceedingly costly and the planning of the postwar airport therefore should be undertaken with possible future expansion in mind. Location is of utmost importance, yet land costs must be considered, and the equation must include the factors of existing or possible transportation (surface, helicopter, or feeder plane) between the port and the center of business activity. Existing or embryo airports should be analyzed to determine whether they can be made adequate for probable future developments, for the simultaneous arrival and departure of many planes demand large fields.

According to a recent government report there will be about 865 major airports in the United States by the end of 1943, exclusive of certain military airdromes. Most of them will have paved runways of sufficient length to handle the largest craft in use today. Less than 100 such fields existed in 1940. In addition to these, all major civilian airports belong to municipalities and other political subdivisions, which operate the fields as public facilities, except as their use is restricted by Army and Navy requirements.

Numerous new airports for the use of military transport and combat planes have been constructed with American and Allied funds throughout the United Nations. After the war many of these fields will be available for civilian air transport use. We shall have the planes—all types of planes—and we shall have the pilots for the planes, and airports in various stages of development.

Practically every community, even the most remote, can have facilities for the advantages of air transport. Many such, now inaccessible but near natural resources, may develop because of air transport. Plans should be made now by those communities which do not have air fields within a suitable distance, or by those communities whose existing air fields will not fit into their regional planning, or are not of the right design or size to care for the amount and type of traffic that can be reasonably inferred as possible. Some plans are being made now, more should be. The real challenge to the planner is that of determining the many ways in which aviation will affect community activity and our everyday life. His present problem is to use, add to, or convert the facilities which will be available after the war, and to plan with vision the new facilities which will be needed.

The business life of a community will be very closely related to the air field, either adjacent to it for certain phases, or accessible by very rapid and efficient transportation. This close identification will alter community patterns in many cases. Likewise, because of new airports, former small communities may become active centers for business or industry; while larger communities or cities whose transportation systems, real estate values or other competitive factors are adverse, may gain little from aviation development, and in some cases may even decline.

Airports of tomorrow will be of different types. Four types must be considered, those 1) for passenger and mail transportation, 2) for cargo, both freight and express, with facilities for gliders as well as motor-planes, 3) for helicopters, and 4) for private planes. These may of necessity be combined in the early development of the airport for financial reasons. Possible change and expansion should likewise be considered from the first. The amount of activity for each type depends on the character of the community—its industries, its other forms of transportation, its proximity to markets, etc.

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American Airlines, Inc.

Orville K. Blake

Airport dining rooms overlook the expanse of the airfield

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Helicopter taxi services are already being formed for the future

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Business centers will develop at airports of the larger cities, with either main offices or branch offices located there, so that business men may save time. Heretofore much of the time saved by flying between cities was lost in surface travel to the business center. Hotels, theaters, restaurants, clubs, amusements, athletic activities, and numerous other developments will be a part of the master plan of a main terminal area.

Because of the accent on speed and the necessity of making maximum use of the costly transport planes, the complete plan for the field, both in physical aspects and in operating procedure, will be directed toward quick, efficient handling of passengers, luggage, and mail. To facilitate such handling special equipment will be used such as "walkie-talkie" two-way radio, belt conveyors, fast easily manoeuvered derricks, two-level circulation for passengers and luggage, special containers designed to become a part of the plane, etc.

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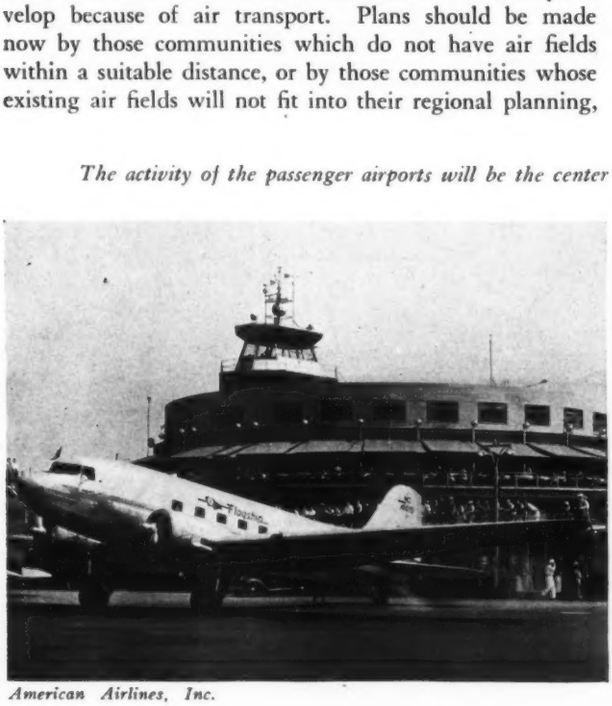

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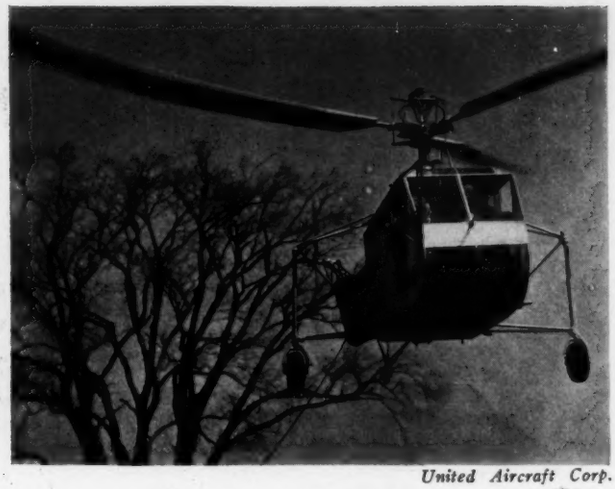

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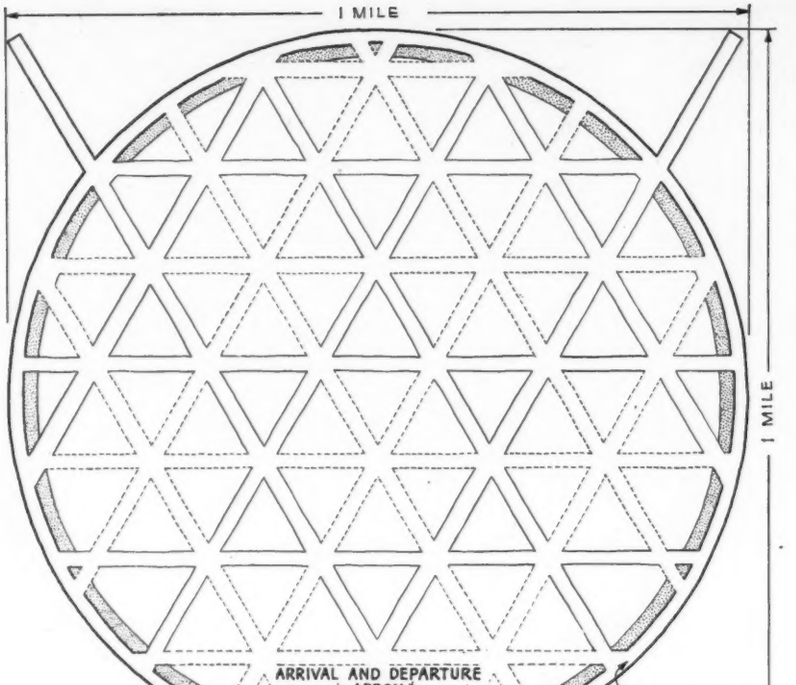
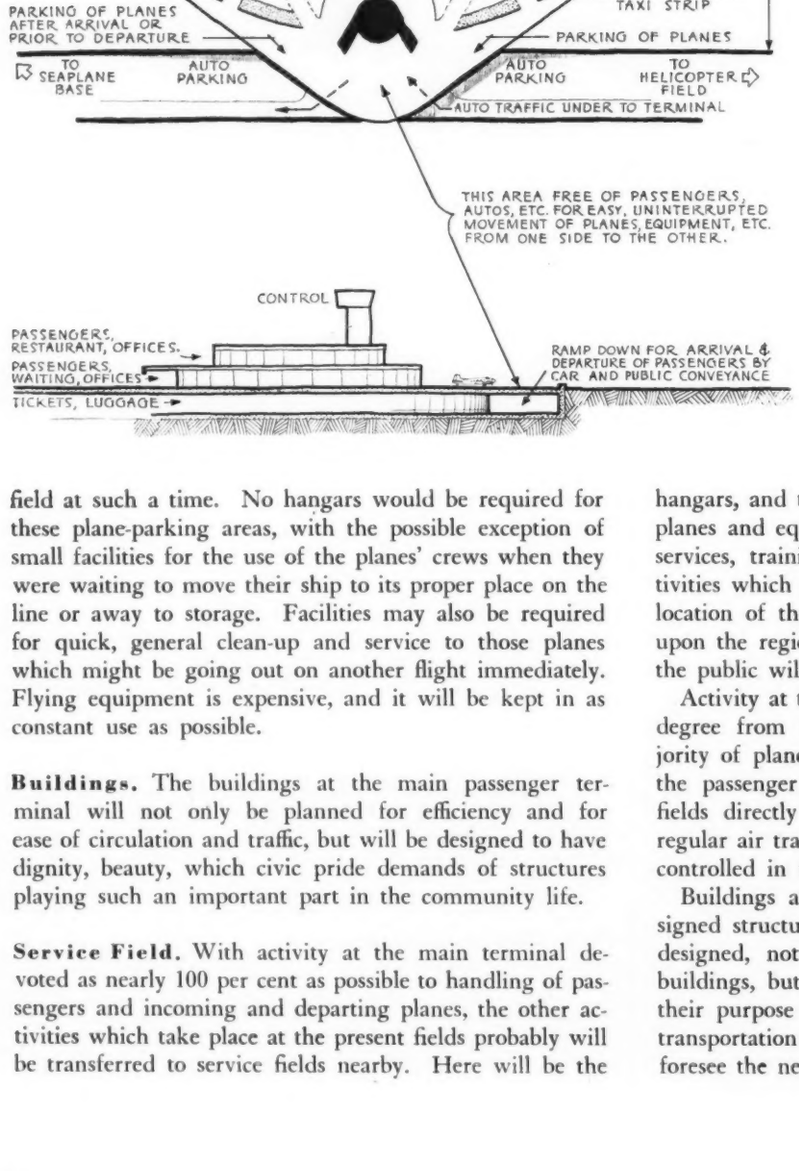



THIS AREA FREE OF PASSENGERS, AUTOS, ETC. FOR EASY, UNINTERRUPTED MOVEMENT OF PLANES, EQUIPMENT, ETC. FROM ONE SIDE TO THE OTHER.
CONTROL
PASSENGERS, RESTAURANT, OFFICES
PASSENGERS, WAITING, OFFICES
TICKETS, LUGGAGE
RAMP DOWN FOR ARRIVAL & DEPARTURE OF PASSENGERS BY CAR AND PUBLIC CONVEYANCE

Multiple, parallel runways permit the arrival or departure of several ships simultaneously. Because of the circumferential taxi-strip the runways are used only for the relatively short time the planes are actually landing or taking-off, thus rapidly freeing the runways for use by the next group of planes. . . . An empty plane, having arrived at one side of the terminal prior to scheduled departure, crosses to the opposite side to take its proper place on the passenger apron.
Except for the terminal building itself, no buildings are at the field to interfere with the use of the runways, taxi-strips, or general activity of passenger service. . . . Multiple levels of movement for passengers, luggage, freight, and servicing, permit each to be planned for maximum efficiency. The contact with the other functions is thus controlled as desired, rather than producing constant interference which results when lines of functions continually cross.

field at such a time. No hangars would be required for these plane-parking areas, with the possible exception of small facilities for the use of the planes' crews when they were waiting to move their ship to its proper place on the line or away to storage. Facilities may also be required for quick, general clean-up and service to those planes which might be going out on another flight immediately. Flying equipment is expensive, and it will be kept in as constant use as possible.

Buildings. The buildings at the main passenger terminal will not only be planned for efficiency and for ease of circulation and traffic, but will be designed to have dignity, beauty, which civic pride demands of structures playing such an important part in the community life.

Service Field. With activity at the main terminal devoted as nearly 100 per cent as possible to handling of passengers and incoming and departing planes, the other activities which take place at the present fields probably will be transferred to service fields nearby. Here will be the hangars, and the buildings for maintaining and servicing planes and equipment, food preparation, flying personnel services, training, engineering, and the many other activities which are not of immediate public concern. The location of these service fields will not be so dependent upon the regional arterial transportation systems, because the public will have little or nothing to do with them.

Activity at the service field will be controlled to a great degree from the passenger field, inasmuch as the majority of plane movements will be a result of activity at the passenger terminal. Planes coming in from other fields directly to the service field will be flying under regular air transport regulations, and consequently will be controlled in the same way as passenger-carrying planes.

Buildings at the service fields may well be lightly-designed structures, with their great spans and clear areas, designed, not as monuments or impressive community buildings, but rather as "expendable" structures to serve their purpose over a relatively short period of life. Air transportation is developing so rapidly that no one can foresee the needs for these auxiliary and service fields for

Orville K. Blake

All planes must obey the orders from the central control tower

longer than a few years ahead. Consequently, the buildings for these fields should be designed for most efficient use during the immediate period, with a minimum of loss when alterations or movement take place as conditions change.

Hangars for maintenance of planes will be of sufficient size to house planes as we know them today. However, when planes reach the height and wing-spread of some of the giants now being tested, it is doubtful if it will be economically feasible to build hangars large enough to completely house these super-planes. Large cantilevered shelters will protect workmen servicing the plane in the open, much as ships are handled in dry-dock. Parts of the ship which cannot be worked on from the interior will be detachable for efficient handling where proper service can be given them in more protected areas.

CARGO OR FREIGHT AIRPORTS. Activity in passenger transport and private flying after the war will be an expansion of prewar activities, accelerated by the war, but freight flying and the cargo field will be a comparatively new phase. The flying of cargo will not detract from trucks, railroads and ships, but will supplement these established forms of cargo transportation. The cost of air freight will always be relatively prohibitive except where *time* is of prime importance, or for otherwise inaccessible places.

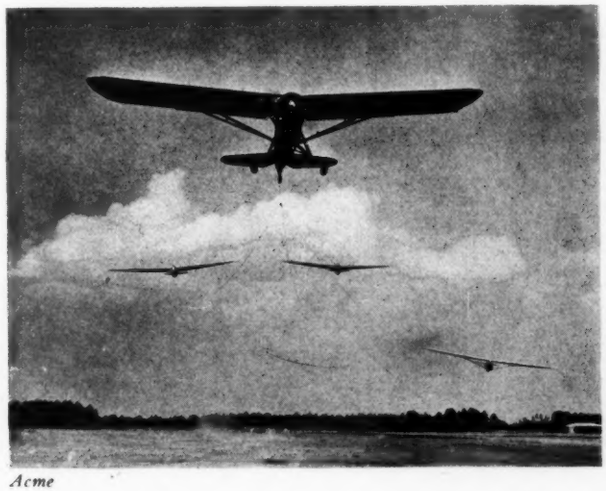
In large and main terminal cities, cargo fields will be apart from the passenger terminals, and will be located so as to be convenient to industry, regional freight transportation, and railroads. In the selection of their sites, real estate values will be considered to a greater degree than in the transport fields. Although the very fact that they will be located close to industries, market areas, railroads, and the like, means that the value of the land will be in a much lower real estate bracket than that for the passenger fields which will be near arterial highways and close to the center of the community.

The cargo field will have its own control, and at a terminal city, its planes may be serviced at the same field used in servicing passenger transports. In other cities, this servicing of cargo planes will take place at the cargo field. Around the freight port will be business and industrial interests, both for administration and for production. Food markets will be adjacent to the field to take advantage of produce brought in fresh or in refrigerated or quick-frozen containers. Quick-freezing plants and storage plants will be near the field also, which will attract markets for local produce.

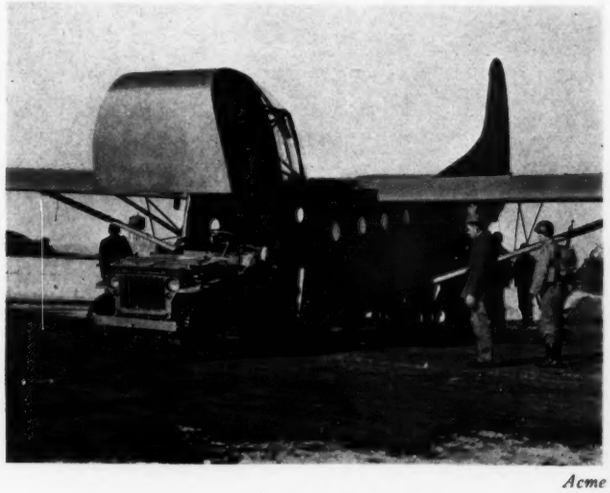
The cargo field will handle glider-trains, and in smaller communities there will be "pick-up" areas for servicing these communities by air cargo, even though the size of the community does not make it feasible to maintain full cargo facilities. Special equipment will be used at all cargo fields for the quick and efficient handling of the cargo. Containers, which when placed in the ship become a part of the plane, will be used for packing goods by the shipper at his own establishment thus greatly facilitating the handling and shipping.

Industrial Fields. Around industrial areas, and even at individual plants, fields will be developed for direct servicing for those industries where the time element is an important factor. In these cases much merchandise will be shipped directly from the factory by air, without the intermediate steps of today's transportation. Such

Fleets of cargo trailers will be towed and released at their destinations in peace as in wartime



Acme



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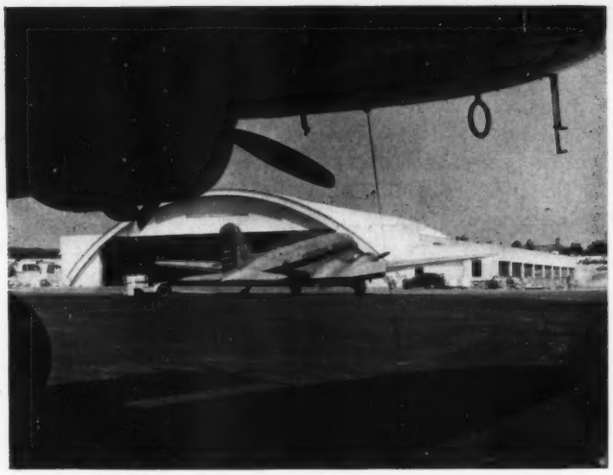


Orville K. Blake

Service and repair hangars may eventually be at other fields

American Airlines

Plane loading will develop new techniques and packaging

facilities will attract other industries, the delivery of whose merchandise would again be tied in with the time element. Thus, fields will be located for industry, and industry will locate because of fields.

Other Airports. Airports for medium-sized cities will take on somewhat the same character as those for terminal cities. The type of traffic and use of the airport will control the degree to which the various airports, described above, will be grouped as one. In many cases one airport will serve the community for all types of commercial air activity. As the city develops, the activity can be segregated, and divided among new or other fields.

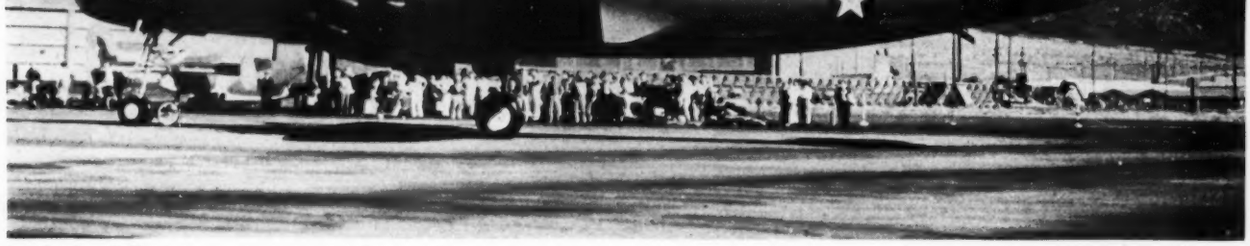
Training Fields. With the tremendous interest aroused in aviation by this war, flying schools will be found scattered throughout the country. Because flight training for the most part will still be done in the small ships, little change in field requirements will result. Buildings to house more extensive training for instrument flying and training for maintenance of motors may require more or larger buildings. This increase in buildings will be little more than an increase in floor area, not a specialized type of construction.

PRIVATE FLYING. With the thousands of pilots returning from the war, with the country in general being air-minded, and the development of the helicopter, the result will be a vast extension of private flying facilities. The fields will become less exclusive country clubs, as was the case of private fields before the war, but rather focal points for community gatherings. Around these will be built amusement and athletic areas, restaurants, theaters, inns, and the other activities that spring up in any community center.

Some business buildings will undoubtedly locate in the vicinity of these private fields, for such fields may be used by companies having their own planes. In many communities this type of field will probably serve as the industrial field also, depending upon the character of the industries of the community.

Airport planning emphasizes the need for basic regional planning and the immense influence the airport will have on community development. The environs of airports may well become the centers of building activity.

Forerunner of great air Leviathians, cargo and transport planes, the giant Lockheed Constellation shows what airports must expect



Lockheed and Vega

TYPES OF HANGAR TRUSSES

By ELWYN E. SEELYE

Elwyn E. Seelye and Co., Consulting Engineers

A VAST NUMBER of airplanes in a wide variety of sizes, from small private planes to giant transports, will require a tremendous expansion in hangar facilities to meet the growing demand of postwar air transportation.

The dimensions of any hangar building are naturally dependent upon the size and the number of planes to be housed. For single planes, the hangar area is relatively wide and shallow, governed by the wing span, the overall length and sufficient working clearance. For a number of planes, the hangar area, and the relation between span and depth of that area, depend upon the size of the planes and the manner of handling them. With a depth more than about 1 and 1-½ times the span the handling problem becomes difficult. Multiple hangar construction may be necessary in spite of the additional walls and mechanical doors. Planes with foldable wings will of course increase the capacity of the hangar.

The hangar designer's first structural problem is that of choosing materials for long span construction, fireproof or non-fireproof (assuming normal conditions, without priorities). In the "fireproof" group, reinforced concrete and fire-protected steel may be used, and in the non-fireproof group unprotected steel or wood.

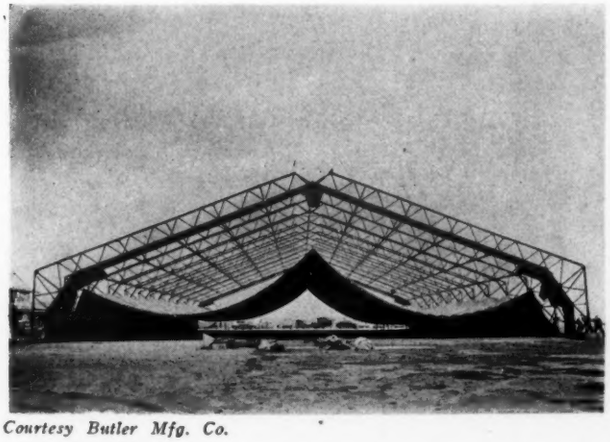
The fire-resistance of a hangar of a wood or unprotected steel construction can be improved to a considerable extent by choosing a design having a small number of comparatively heavy members. From this point of view, Type 2 (shown on the following page) without web system and Type 3 are preferred as compared to Type 1 and Type 2 with web system. The few heavy members have less area exposed to the heat and also have more advantageous slenderness ratio, the latter being especially important in a steel construction. It is desirable to treat the wooden members chemically so as to make them slow-burning. The comparison between a chemically-treated wooden construction similar to Type 3 and an unprotected steel construction similar to Type 1 from the view of fire-resistance under full load will be in favor of the wood construction although the construction in itself supplies combustible materials.

An arch-shaped structure under full load is more fire-resistant than, for instance, Pratt trusses under the same load conditions because in the arch the unit stress in the material for the assumed load condition is about fifty per cent of the allowable stress as compared with a truss where members are stressed to the full allowable value.

Most of the accompanying sketches indicate single hangars designed with two-hinged frames. To develop these as multiple hangars, add additional frames with one leg in common for two adjacent frames thus forming a frame continuous over intermediate supports. The reason for having elevated tension bands in the single frames is to economize by reducing the corner moments; two of these in each frame. For a multiple frame the horizontal component at the bottom of the intermediate legs is considerably less than for the outside legs and for that reason it may be more economical to eliminate the elevated tension band and take the horizontal force at the floor level either by tension bands or by the soil in the case of rock or hard pan. In this case only the two outside legs for the multiple hangar have to be designed for considerable moment. The moments in the intermediate legs are relatively small and governed practically by the live load only.

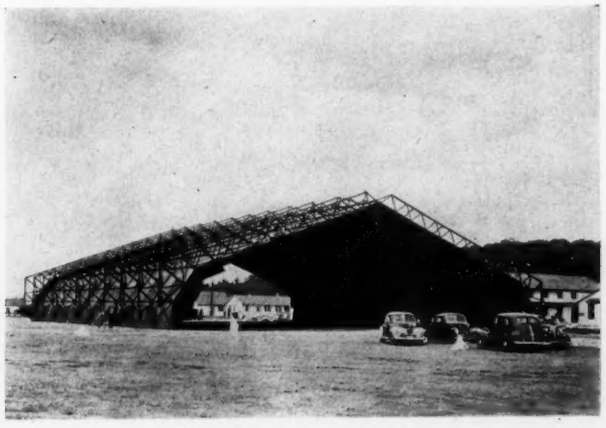
The commonly used doors are of two types, either overhead doors or folding leaf doors, all mechanically operated. For both types a separate construction is required to take the wind pressure.

(See also, Cantilever Hanger, ARCHITECTURAL RECORD, December, 1942, pages 41-44).



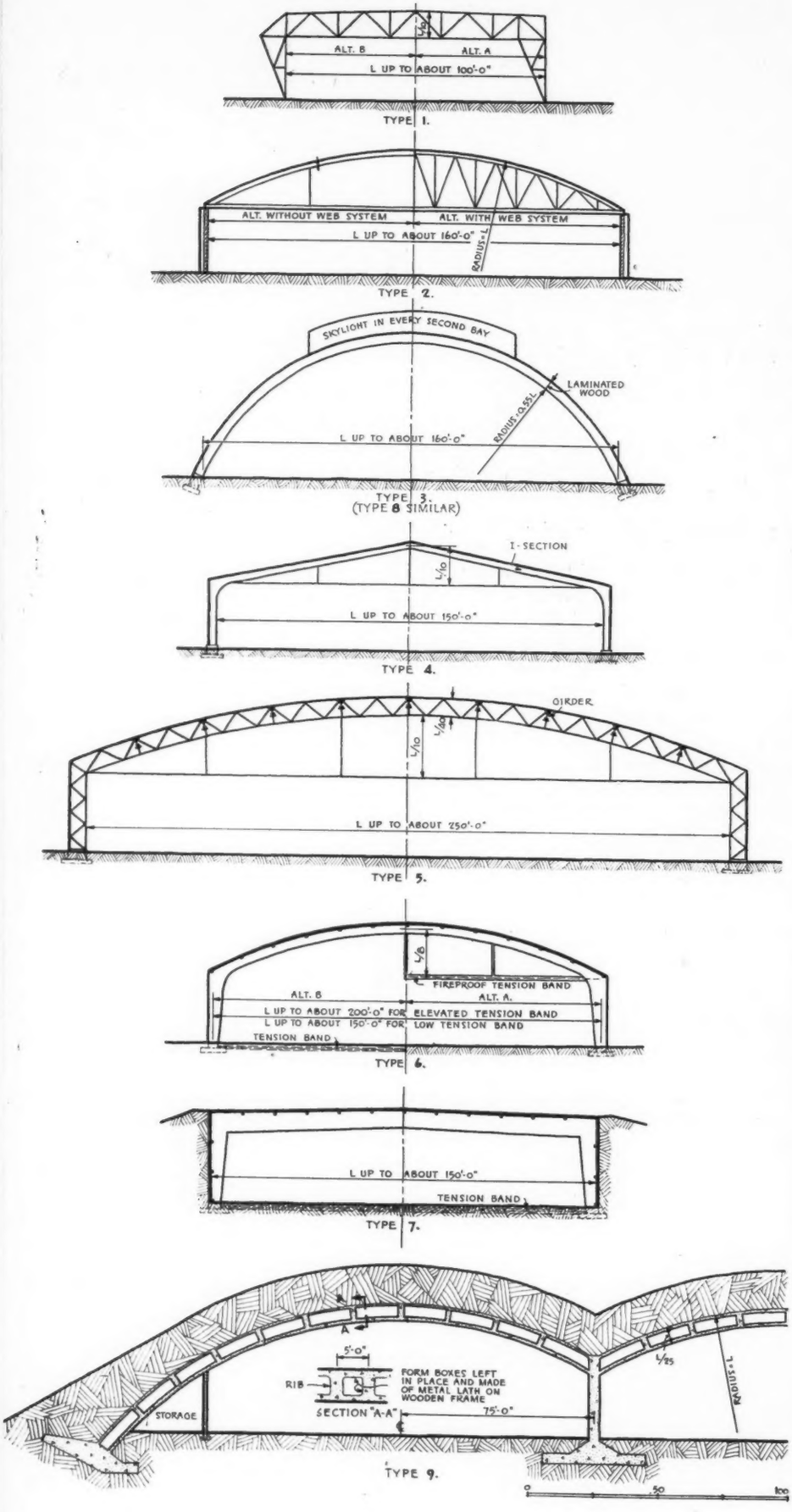
Courtesy Butler Mfg. Co.

Prefabricated hangar that can be flown to distant combat areas.



Steel members are quickly assembled in a tied, 3-hinge scheme.

SOME TYPES OF HANGAR TRUSSES



Type 1. Two-Hinged Wooden Frame: *Span up to 80 ft. Spacing up to 20 ft. Trusses of wooden planks connected by bolts and split rings. Lateral bracing of top chord through purlins and sheathing. No tension band, horizonal force from frame taken by the soil.*

Type 2. Wooden Bow Truss: *Span up to about 160 ft. Spacing up to about 20 ft. Top and bottom chord of laminated wood, web of solid wood members. Connections, bolts and split rings. For span up to about 100 ft. it may be advantageous to omit the web system and take the moment from the one-sided load in the top chord. Lateral bracing of top chord through purlins and wood sheathing.*

Type 3. Three-Hinged Wooden Arch: *Span up to about 160 ft. Spacing up to about 20 ft. Segmental arch of laminated wood. Three hinges to facilitate erection; no tension band; horizontal force from the arch taken by the soil. Lateral bracing of the arch through purlins and sheathing.*

Type 4. Two-Hinged Steel Frame *with elevated tension band: Span up to 150 ft. Spacing up to 20 ft. Steel purlins, legs and arch of rolled I beams. Wind bracing from foundation through walls and arch in every tenth bay. No tension band in floor level.*

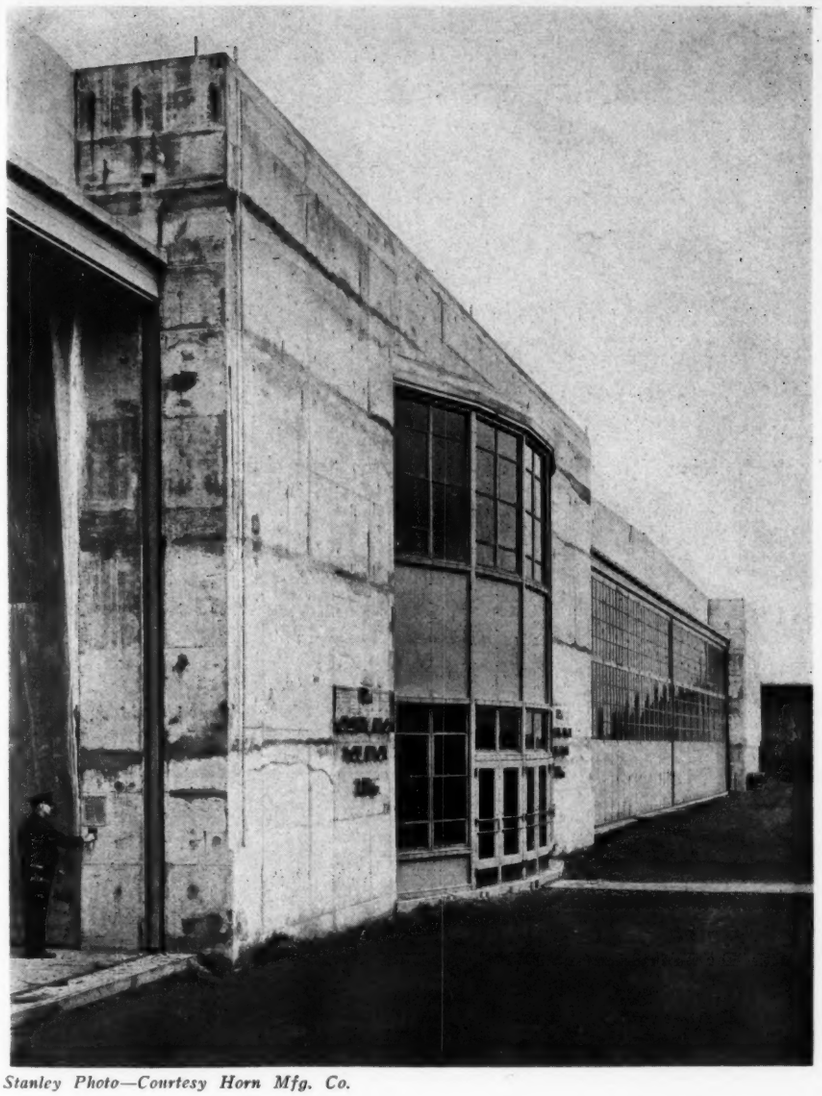
Type 5. Two-Hinged Steel Frame *with elevated tension band: Span up to 250 feet. Spacing up to 40 ft. Intermediate girders perpendicular to frame. Steel purlins. Wind bracing from foundation through walls and roof in every fourth bay.*

Type 6. Two-Hinged Concrete Arch. *Alternate A: Elevated tension band. Span up to 200 ft. Alternate B: Tension band in floor. Span up to about 150 ft. Spacing up to 25 ft. Purlins and slab of reinforced concrete.*

Type 7. Two-Hinged Concrete Bent: *Span up to about 150 ft. Spacing up to 25 ft. Three sides of the building backfilled. Roof purlins and slab of reinforced concrete. Walls of reinforced concrete.*

Type 8. Two-Hinged Concrete Arch, *similar to Type 3: Span up to 200 ft. Spacing up to 25 ft. Roof, purlins and slab of reinforced concrete. Tension band in floor level.*

Type 9. Continuous Two-Hinged Concrete Arch, *fireproof, "bombproof," reinforced. Span up to 150 ft. Spacing of concrete rib arches, 5 ft. Roof slab and ceiling slab at top and bottom of rib arches respectively shock-absorbing beams perpendicular to ribs. Protecting layer of fill on top of arch.*



Stanley Photo—Courtesy Horn Mfg. Co.

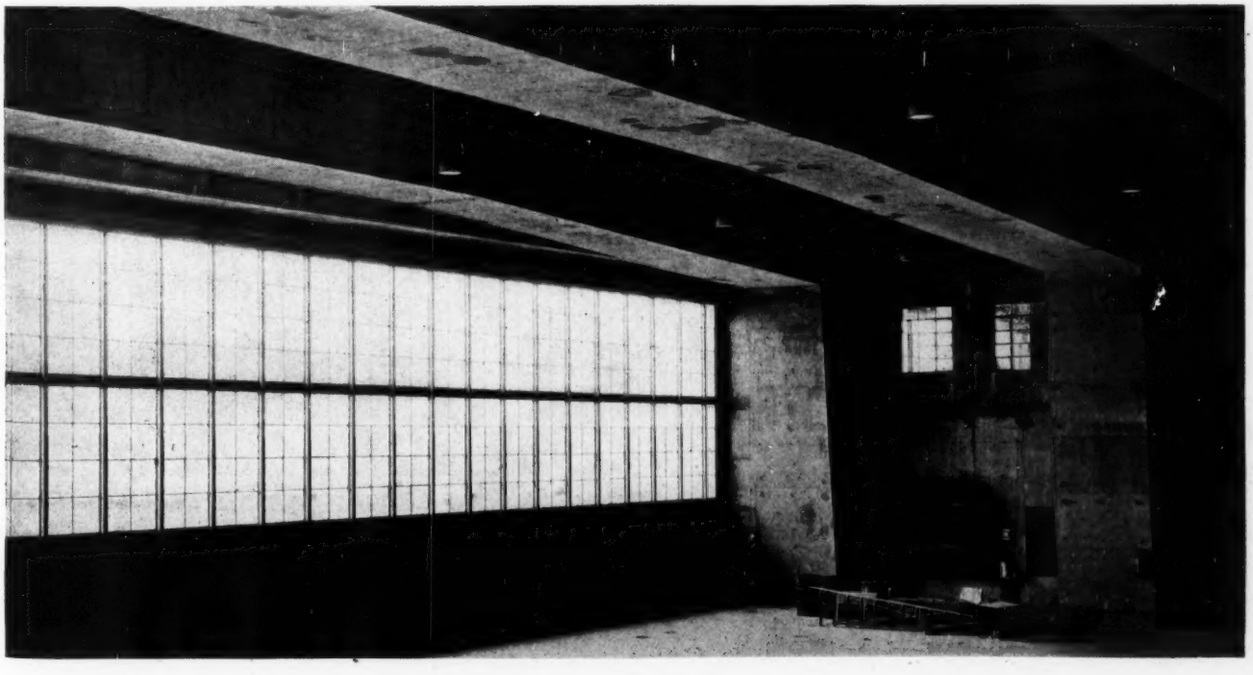
A PERMANENT HANGAR FOR WAR PLANES

WILLIAM N. NIELSEN,
ARCHITECT-ENGINEER

LESLIE FORSYTHE,
CONSULTING STRUCTURAL ENGINEER

B. E. LANDIS,
MECHANICAL ENGINEER

FOR PERMANENT hangar construction, this national guard hangar and armory, shown here in progress photographs, illustrates some interesting construction and equipment ideas not found in the more temporary wartime buildings. It combines with the hangar areas an extensive complement of storage spaces, various operating rooms, lounging quarters, medical facilities, and so on, all of which introduce unusual heating problems in the rather cold climate in which this building is located. And the building is of all-concrete construction, with metal hangar doors and windows, and



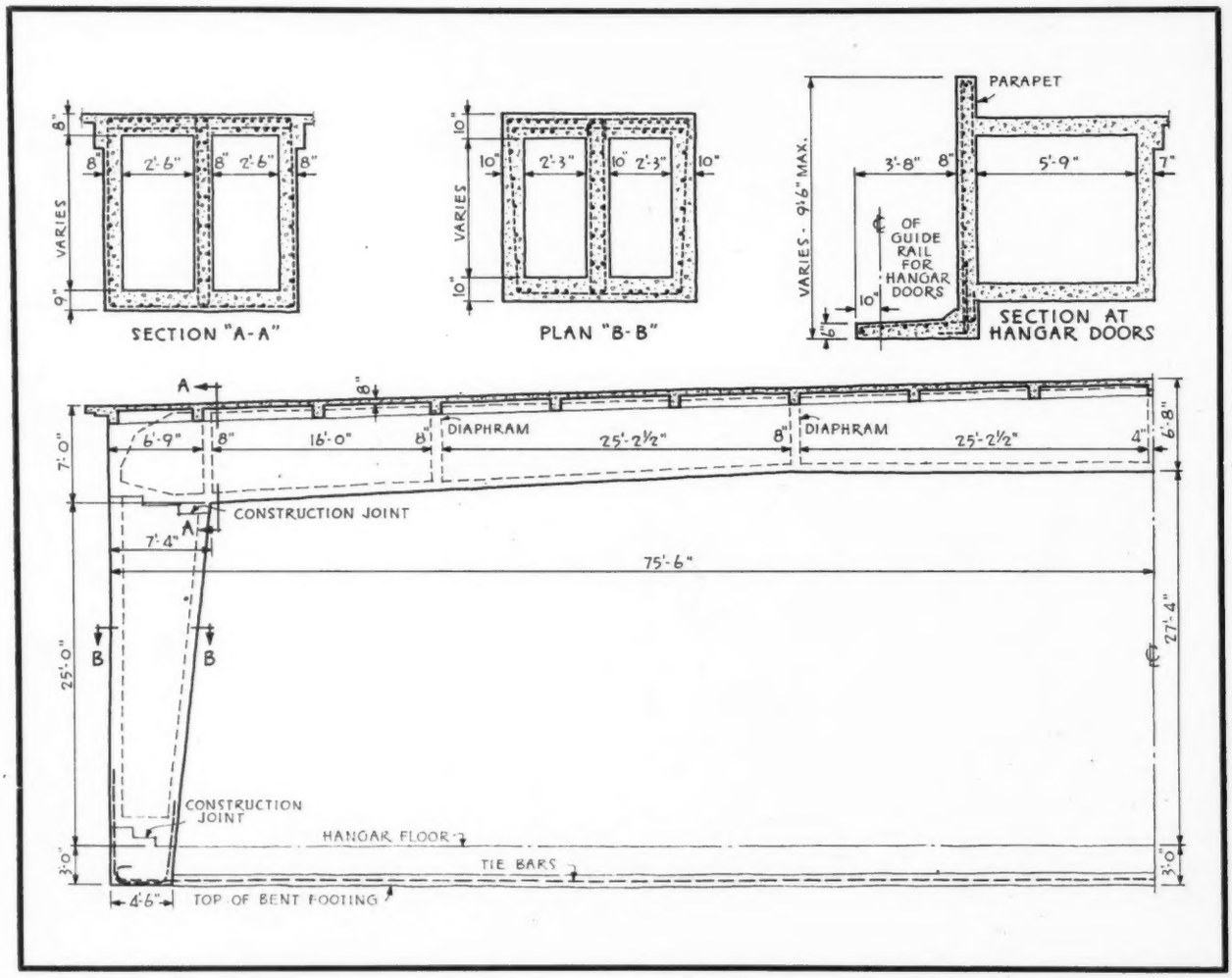
Repair and operating rooms take up the central section and an office building is joined on the rear

without any structural or finishing wood in the building or its normal equipment.

Roofs are supported by rigid concrete bents of cellular design (see drawings below), with tie rods under the floor to take the horizontal thrust of the legs. The hollow bents were constructed in sections, each section being completed as a continuous operation. Small openings, later patched, were left in diaphragms and top slabs for the removal of the wooden formwork.

Hangar doors have a net opening of 140 by 26 ft., and are of the completely automatic electric accordion folding type. This type was chosen here to give a flush door, so as to preserve the architectural lines.

Heating is by stoker-fired steam boilers, with unit heaters in hangars, garages and shops, and indirect radiation in other rooms, all thermostat-controlled. A forced air ventilation system is installed throughout. Steam return lines cross the hangar space in a tunnel under the hangar doors; the heat loss is adequate to keep doors and door aprons free of ice and frost.



The roof is supported by rigid U-frame bents of hollow concrete construction with tie rods under the floor to take side thrust

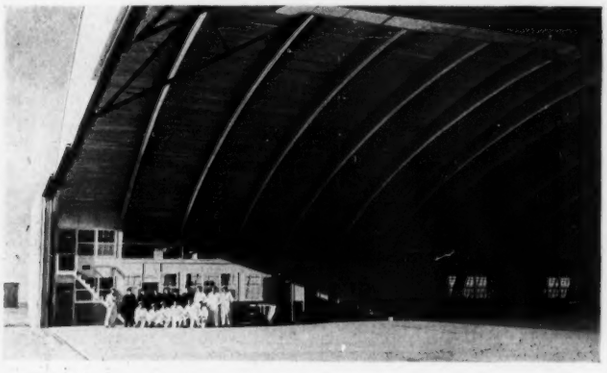
Courtesy Unit Structures, Inc.

Arches are trucked in two 100-ft. sections, each rigid enough to be picked up at a single point

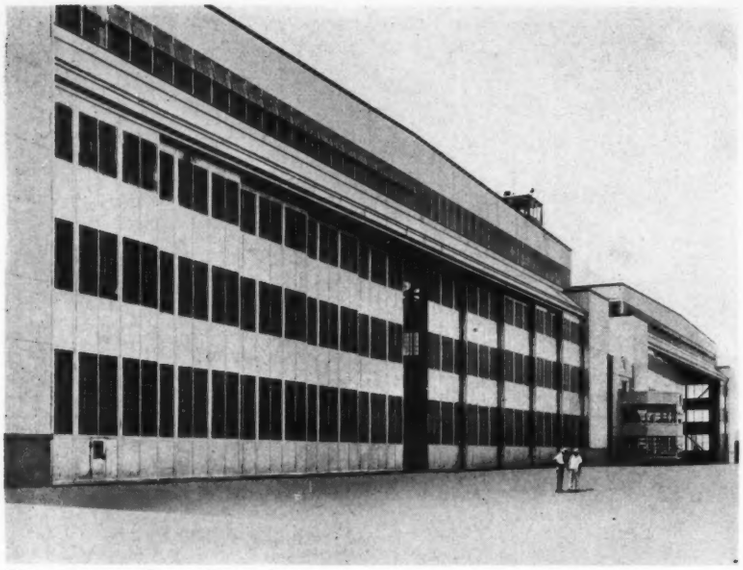
ARCHES OF LAMINATED WOOD

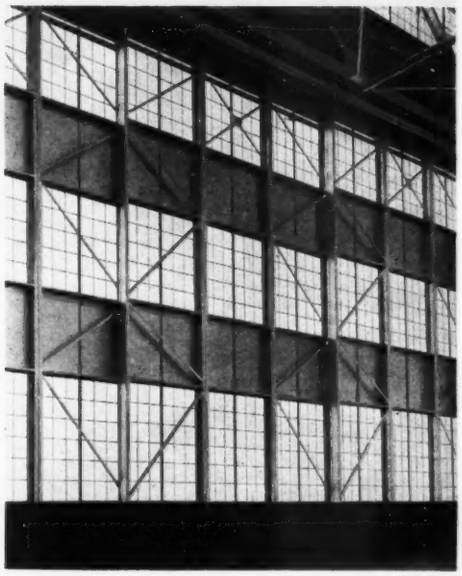
Swinging arch ends into position against concrete buttresses

JUST BEFORE THE WAR hangars spanned by glued laminated wood arches were being developed to house the huge transport planes. Pictures above and below show two steps in construction of such a hangar, this one of 170 ft. span. The design is based on the three-hinge principle, with concrete buttresses at ground level. The arches are 10 ft. on center, so joists and purlins are eliminated. A 2-in. dressed and matched sheathing is nailed directly to the arches. This scheme also eliminates all wind bracing. Construction is fast, and costs are said to be low.



A similar hangar built at an overall cost of $2.40 per sq. ft.

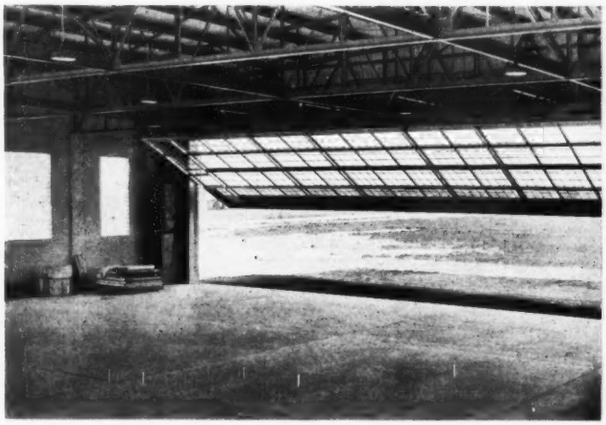




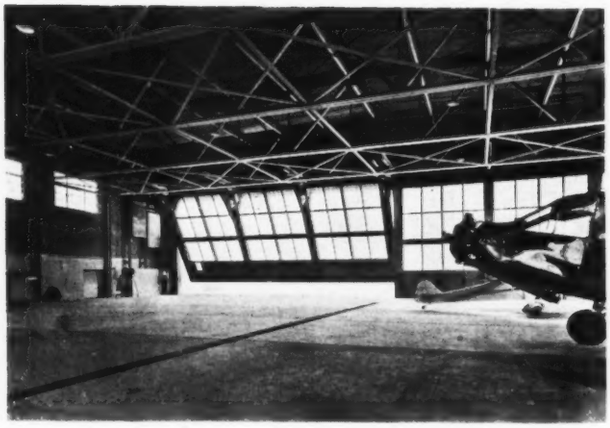
Photos Courtesy Byrne Doors, Inc.

Hangar doors of the motorized multi-leaf "slide" type. Opening here is 250 ft. wide, 48 ft. high

HANGAR DOORS THAT ROLL OR RISE



Canopy type doors (these in Indianapolis) are counter-weighted; motors take only the wind load



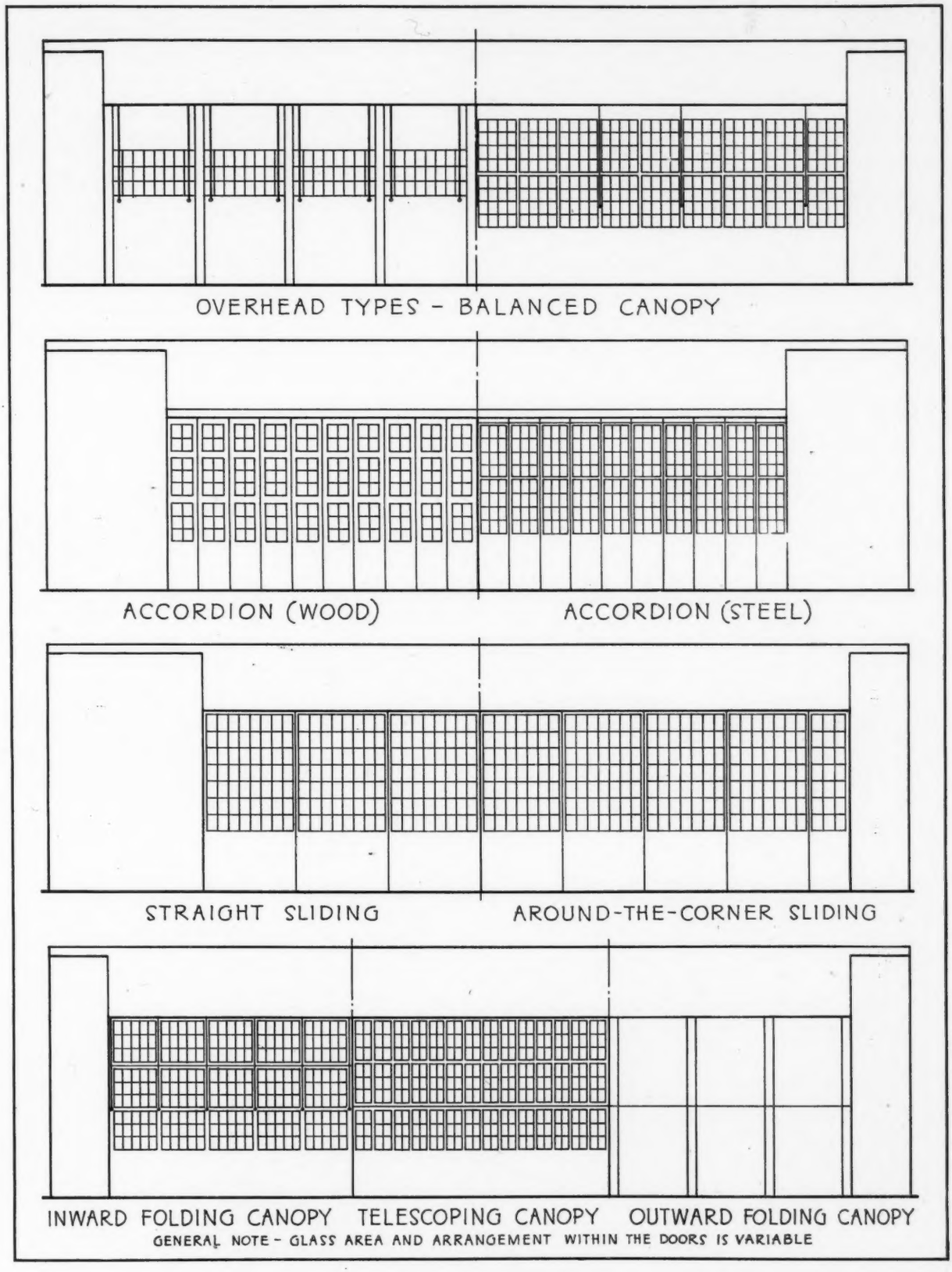
For smaller planes, sectionalized canopy-type doors can be operated independently or together

HANGAR DOOR DETAILS

By W. J. Ward, Jr.

Elevations of Different Type Doors

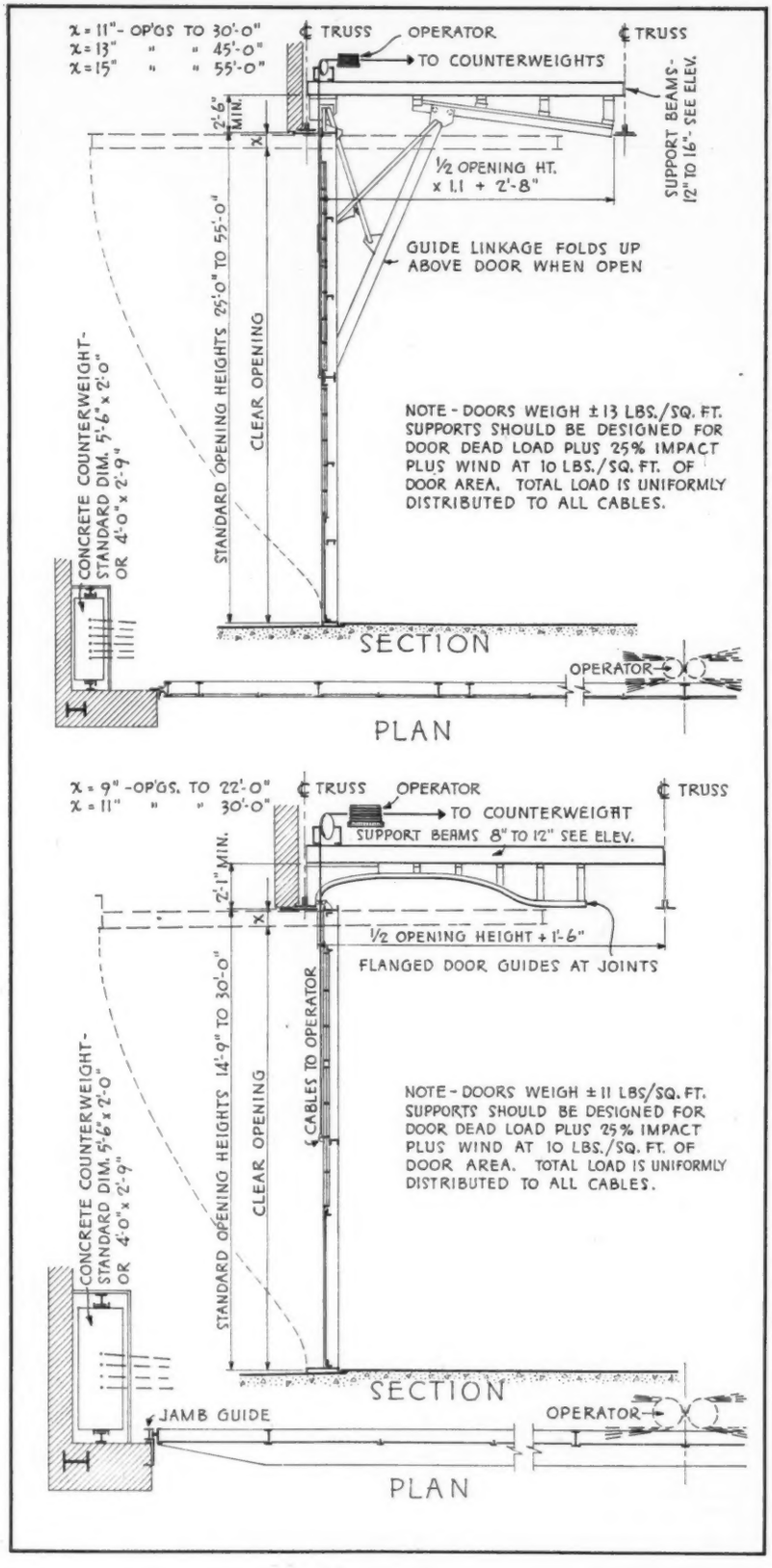
ARCHITECTURAL RECORD
TIME-SAVER STANDARDS
JULY, 1943



ARCHITECTURAL RECORD
TIME-SAVER STANDARDS
JULY, 1943

HANGAR DOOR DETAILS

Balanced Canopy Doors


x = 11" - OP'GS TO 30'-0"
x = 13" " " 45'-0"
x = 15" " " 55'-0"
℄ TRUSS
OPERATOR
TO COUNTERWEIGHTS
℄ TRUSS
SUPPORT BEAMS - 12" TO 16" - SEE ELEV.
2'-6" MIN.
x
½ OPENING HT. x 1.1 + 2'-8"
GUIDE LINKAGE FOLDS UP ABOVE DOOR WHEN OPEN
STANDARD OPENING HEIGHTS 25'-0" TO 55'-0"
CLEAR OPENING
CONCRETE COUNTERWEIGHT - STANDARD DIM. 5'-6" x 2'-0" OR 4'-0" x 2'-9"
NOTE - DOORS WEIGH ± 13 LBS./SQ. FT. SUPPORTS SHOULD BE DESIGNED FOR DOOR DEAD LOAD PLUS 25% IMPACT PLUS WIND AT 10 LBS./SQ. FT. OF DOOR AREA. TOTAL LOAD IS UNIFORMLY DISTRIBUTED TO ALL CABLES.
SECTION
OPERATOR
PLAN
x = 9" - OP'GS. TO 22'-0"
x = 11" " " 30'-0"
℄ TRUSS
OPERATOR
TO COUNTERWEIGHT
SUPPORT BEAMS 8" TO 12" SEE ELEV.
℄ TRUSS
2'-1" MIN.
x
½ OPENING HEIGHT + 1'-6"
FLANGED DOOR GUIDES AT JOINTS
CABLES TO OPERATOR
STANDARD OPENING HEIGHTS 14'-9" TO 30'-0"
CLEAR OPENING
CONCRETE COUNTERWEIGHT - STANDARD DIM. 5'-6" x 2'-0" OR 4'-0" x 2'-9"
NOTE - DOORS WEIGH ± 11 LBS/SQ. FT. SUPPORTS SHOULD BE DESIGNED FOR DOOR DEAD LOAD PLUS 25% IMPACT PLUS WIND AT 10 LBS./SQ. FT. OF DOOR AREA. TOTAL LOAD IS UNIFORMLY DISTRIBUTED TO ALL CABLES.
SECTION
JAMB GUIDE
OPERATOR
PLAN

Balanced Canopy Doors

There are two types of doors which form a canopy when opened: the balanced type and the cantilevered type. The two doors in this drawing are of the balanced type, so called because, in effect, the door is suspended at its center and balanced throughout its operation by counterweights.

The door shown at the top of the drawing has a guide linkage system which makes possible openings of unlimited width since no intermediate obstructing support is required between the door sections. This guide linkage folds within or above the thickness of the door leaf when open; thus it does not obstruct the opening. The door is designed for heights up to 55 ft. Sections can be operated simultaneously or independently.

The other door, designed for openings up to 120 ft. wide and 30 ft. high, is of single leaf construction and is guided by rollers at the top which run in a curved track and by a roller at the center of the door's height which runs in a straight track at the jambs.

Both these doors are designed for motor operation but can be operated by hand in case of motor failure. Both can be opened or closed in a minute or less. Details on p. 78 were adopted from data furnished by Byrne Doors, Inc.

Accordion Doors

The accordion type door, so called because it folds like accordion pleats after sliding into pockets, is illustrated opposite. The door shown is electrically operated and, because of the method of operation employed, it exerts no shock loads on the supporting steel as do counter-balanced door types. Door construction may be structural steel or wood. Details at top of p. 79 were adapted from data by Horn Manufacturing Company.

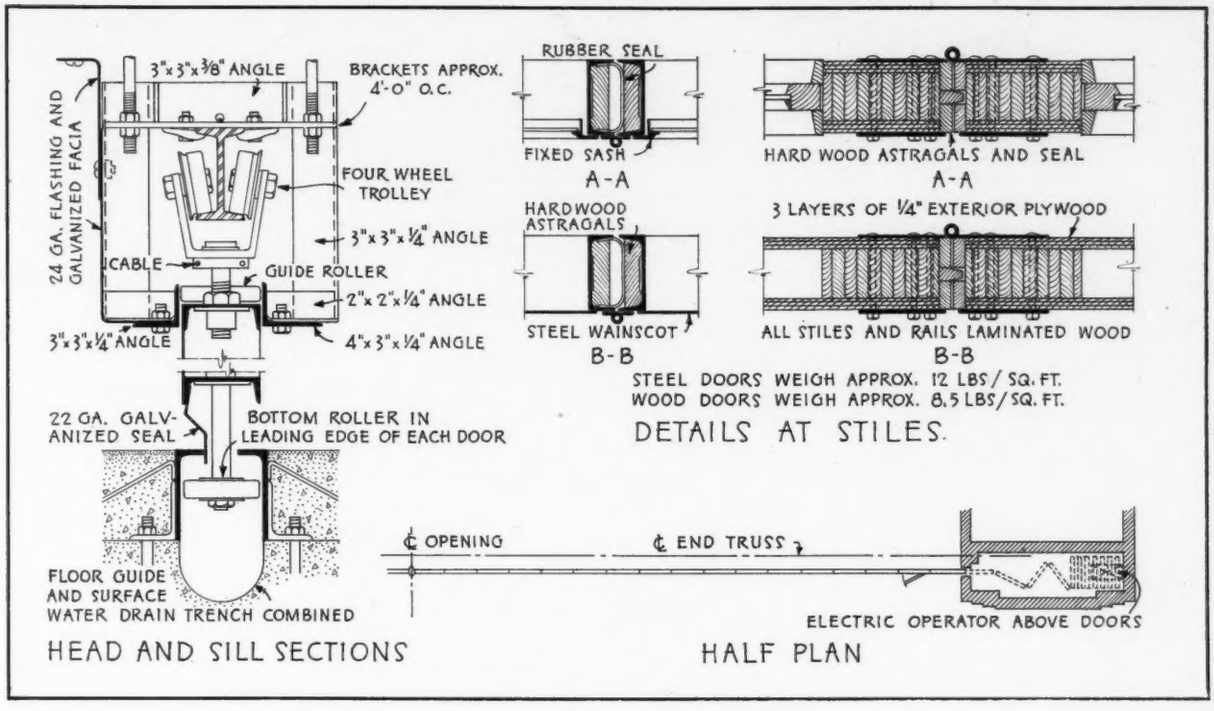
Balanced and Cantilevered Canopy Doors

The canopy doors shown on lower half of opposite page are all either partly or fully counterbalanced canopy types. The one at the left, which is fully counterbalanced, can be used for openings of any width since it can be installed in one or more independently operated sections without interrupting guideposts. The top leaf, hinged both at the lintel and the

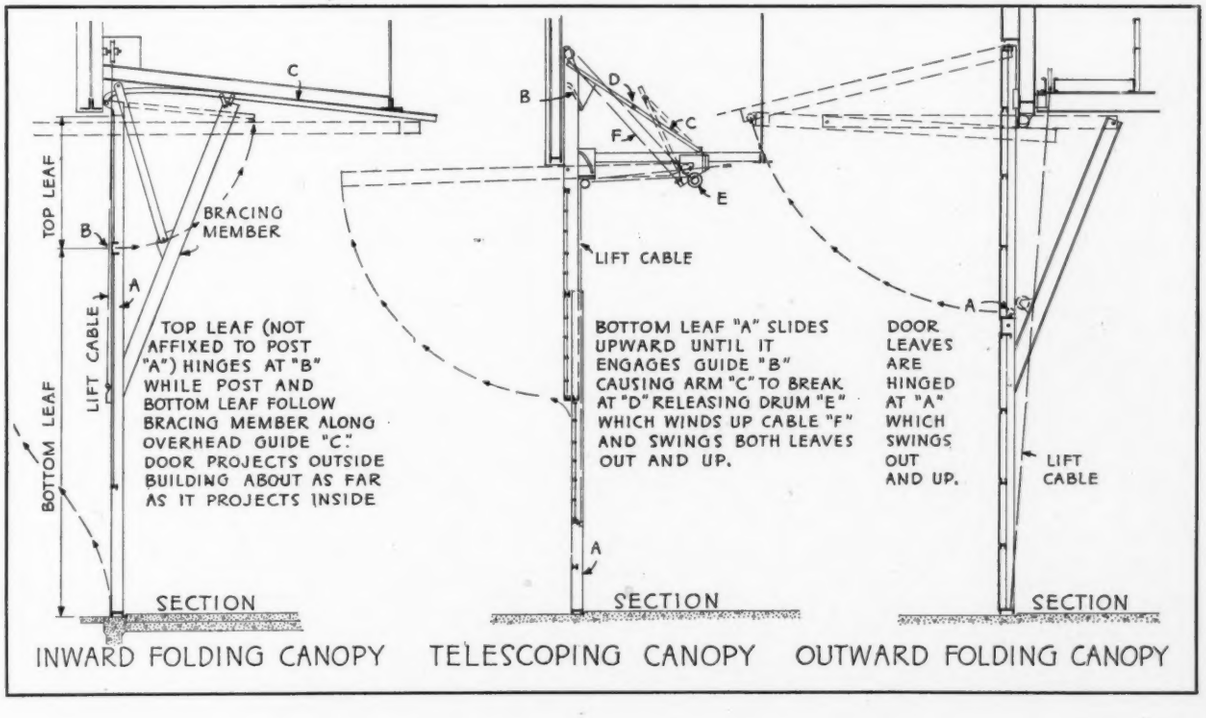
HANGAR DOOR DETAILS

Accordion, and Canopy Doors

TIME-SAVER STANDARDS
JULY, 1943



ACCORDION DOOR DETAILS


C
TOP LEAF
B
BRACING MEMBER
A
LIFT CABLE
BOTTOM LEAF
TOP LEAF (NOT AFFIXED TO POST "A") HINGES AT "B" WHILE POST AND BOTTOM LEAF FOLLOW BRACING MEMBER ALONG OVERHEAD GUIDE "C." DOOR PROJECTS OUTSIDE BUILDING ABOUT AS FAR AS IT PROJECTS INSIDE
SECTION
INWARD FOLDING CANOPY
B
D
C
F
E
LIFT CABLE
A
BOTTOM LEAF "A" SLIDES UPWARD UNTIL IT ENGAGES GUIDE "B" CAUSING ARM "C" TO BREAK AT "D" RELEASING DRUM "E" WHICH WINDS UP CABLE "F" AND SWINGS BOTH LEAVES OUT AND UP.
A
SECTION
TELESCOPING CANOPY
A
DOOR LEAVES ARE HINGED AT "A" WHICH SWINGS OUT AND UP.
LIFT CABLE
SECTION
OUTWARD FOLDING CANOPY

BALANCED AND CANTILEVERED CANOPY DOORS

TIME-SAVER STANDARDS
JULY, 1943

HANGAR DOOR DETAILS

Sliding Doors

door's own posts, acts as a heat baffle when the door is only partly open.

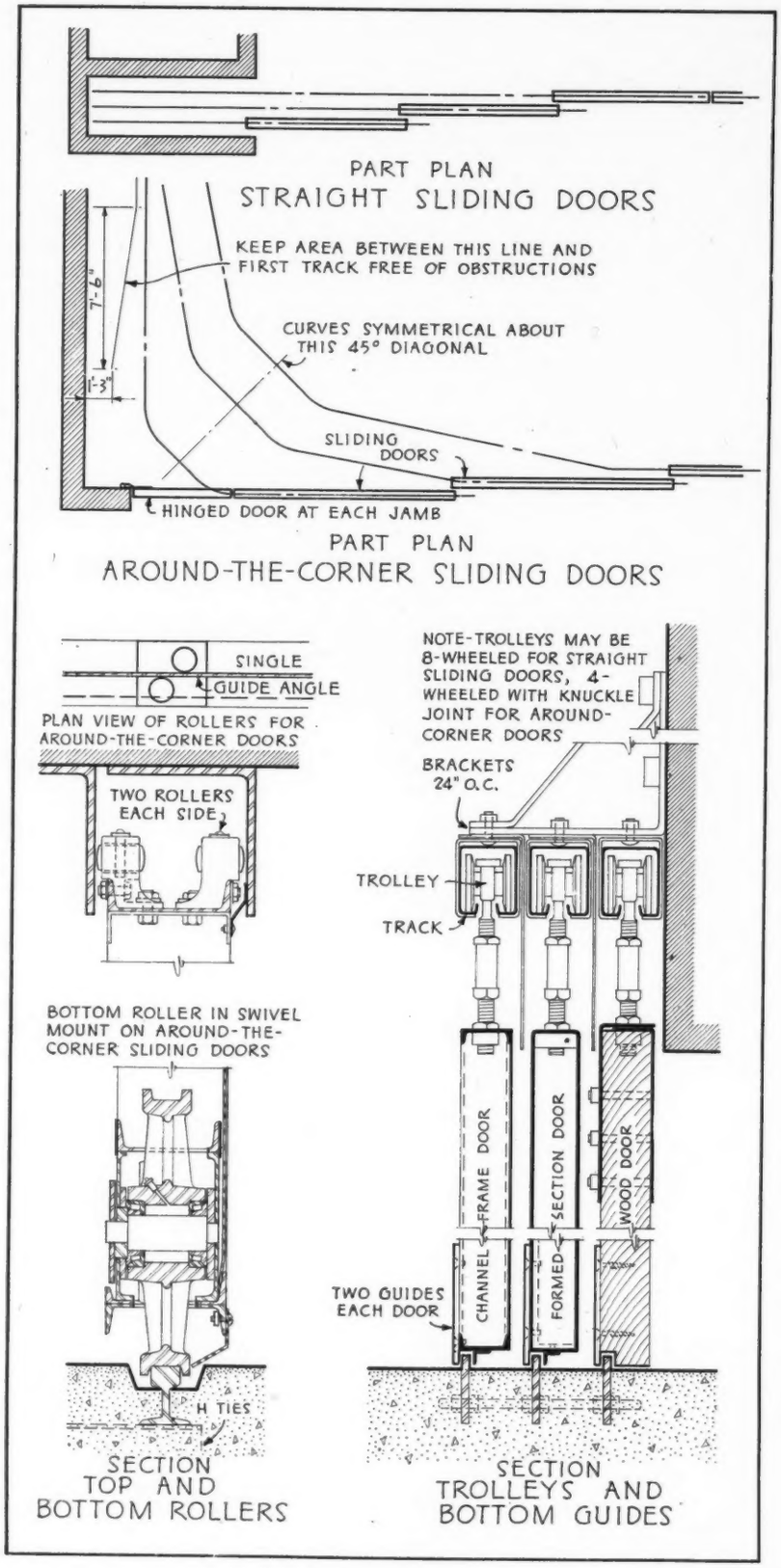
The door at the center of the drawing is a cantilevered canopy type especially adapted to extremely high and wide openings. Since the lower leaf operates vertically upward in the first half of its opening movement, a minimum of clearance is required for planes located on the apron or just inside the hangar.

The door at the right, which forms a sloping canopy when open, is another variation of the cantilevered canopy type. Details at bottom of p. 79 were adapted from data furnished by Truscon Steel Co.

Sliding Doors

Sliding doors may be divided into two types: those which slide in a straight line or in parallel straight lines and those which slide around corners inside the building. To reduce the width required at the jambs with straight sliding doors, a number of parallel tracks may be used so that the doors stand one behind another when in the open position. For very wide openings, more than one door may be mounted on a single track. The same statements apply to around-the-corner sliding doors except that a hinged door is provided at the jambs. Both types of sliding doors may be supported by industrial rails tied together and embedded in the concrete floor or by an overhead track mounted inside the lintel. Of course, in the latter case, the lintel must be designed to support the full load of the door and tracks.

Motor operation of large, sliding doors is almost a necessity but they can be manually operated in emergencies. Ice and snow may make operation of any sliding door installation very difficult, but such installations cost less at the start than canopy types. Details at lower left have been adapted from data furnished by Truscon Steel Co.; at lower right, by Richards-Wilcox Manufacturing Co.



Looking ahead with Asbestos

QUIET!

ON A NERVE-RACKING JOB

In this testing room each one of a battery of machine guns fires more than 1,000 rounds a minute. The racket should be terrific. But the nerve-jangling bark of those guns is hushed to a subdued chatter—because the walls of the testing room are treated with K&M Sprayed "Limpet" Asbestos.

Doesn't that performance of this highly efficient acoustical material give you an idea for a truly *quiet* office in the business world of tomorrow . . . an office free from the clatter of typewriters and other bothersome noises?

To the forward-thinking architect there are also many other advantages of Sprayed "Limpet". This remarkably effective noise-suppressing material can be sprayed on practically any type or shape of surface—following the most intricate contours, if need be. "Limpet" will take as many as ten coats of paint without noticeably affecting its acoustical efficiency.

Right now, the many peacetime possibilities of K&M Sprayed "Limpet" Asbestos *must wait* because wartime needs are taking all of our output.

To manufacturers in many fields, total war has been a spur to greater and more efficient production. At K&M that applies to the making of more and better asbestos products through sustained research. And these new "wartime" methods will have a profound influence on policies and plans when peace returns.

* * *

Nature made asbestos;
Keasbey & Mattison, America's asbestos pioneer,
has made it serve mankind . . . since 1873

KEASBEY & MATTISON
COMPANY, AMBLER, PENNSYLVANIA

Makers of

asbestos-cement shingles and wallboards; asbestos and magnesia insulations for pipes, boilers, furnaces; asbestos textiles; asbestos electrical materials; asbestos paper and millboard; asbestos marine insulations; asbestos acoustical material; asbestos packings; asbestos corrugated sheathing and flat lumbers; asbestos-cement pipe for water mains

K&M best in asbestos

Figure 1

PREFABRICATED SHOWER CABINET

A completely prefabricated shower cabinet meeting NHA-FPHA specifications is built for fast assembly on the job. (Figure 1.) Consisting of only five major parts—two side panels (one of which includes the plumbing panel), a front assembly, a back assembly and a concrete base receptor—each cabinet requires only two cartons for shipment and is complete to soap dish, plumbing fixtures, shower rod and curtain.

The new cabinets are said to be able to withstand hard and continuous use. Superstructure corners and top rails are of heavy hard wood construction, tied together with metal corner braces attached with wood screws. Waterproofing is accomplished by caulking all joints. Both sides of all panels are high-heat-bake plastic-finished Marlite. The cabinets are available for any war housing project when satisfactory priorities can be furnished. Marsh Wall Products, Inc., Dover, Ohio.

HANGAR DOORS

To meet the urgent wartime demands for large doors in airplane hangars, blimps and dirigible hangars, PT boat plants, aircraft plants and for other industrial purposes, a hollow plywood door has been designed. The panels are prefabricated and assembled so that they can slide either vertically or horizontally. They are constructed of standard width plywood which is pressure glued to dressed wood framework. The plywood surface is scarfed, providing one continuous piece of plywood the full length of the prefabricated panel. All exposed ends of sections are finished off with continuous dressed wood framing members the thickness of internal framework, plus the thickness of plywood, thereby sealing edges of plywood. The horizontal sections are framed vertically and the vertical doors are framed horizontally. By varying the thickness of framework and plywood, any doorway problem can be solved, it is claimed. Delivery can be made in ten days after receipt of approved drawings. The Peelle Co., 47 Stewart Ave., Brooklyn, N. Y.

QUICK-RELEASE HINGE

Originally developed for use in releasing ammunition chutes on aircraft machine guns, the Burklyn Quick Release Hinge makes possible the quick and easy removal of screen or storm doors, cabinet lids, folding tables and seats, etc. The unit is composed of a bracket housing spring loaded attaching pins. These pins are equipped with finger pads by which the pins are retracted and the hinged part instantly released.

Present models are available in several bracket designs and lengths from 2 to 6 in. The Burklyn Co., 3429 Glendale Blvd., Los Angeles, Calif.

ACOUSTICAL TREATMENT

A sprayed-on acoustical treatment called Spray-Acoustic, is manufactured and applied on the job in one operation. Said to be vermin-proof, incombustible and sound deadening, Spray-Acoustic is gun-applied. It can be used on any surface—steel, concrete, plaster or metal lath. The finished surface may be either smooth or textured like travertine. Spray-Acoustic is available in any thickness, providing noise reduction as desired from 55 to 90 per cent. According to the manufacturers, it can be repainted many times without appreciable loss of its sound absorbing efficiency. Protective Materials Co., 1511 S. 8th St., St. Louis, Mo.

LIGHTING DEVELOPMENTS

Designed as an aid to fixture manufacturers in their programs to save critical materials, a new line of ballasts with leads coming out through two bushed holes at each end of the base plate has been announced. Installation of the bottom-lead ballasts is said to be simpler because they can be mounted completely exposed atop a narrow, shallow wiring channel just wide and deep enough to enclose the leads. Since this obviates the need to allow room for the complete ballast in the fixture proper, substantial savings in iron and steel are possible, it is pointed out. The exposed location also permits the ballasts to operate in lower ambient temperatures, which contributes to long ballast life. No special installation features are required.

The bottom-lead ballasts are available in ratings most commonly used in war plants: 40-watt Tulamp and three-lamp ratings, and 100-watt Tulamp and Forlamp ratings. The General Electric Co., Schenectady, N. Y.

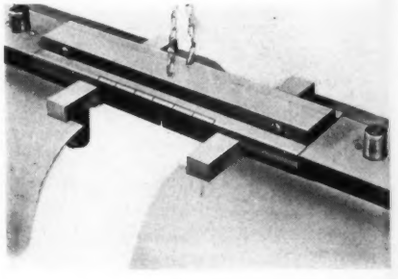


Figure 2

The "Flexi-Coupler," a device which permits spacing of fixture units as much as 6 in. apart, yet preserves all the features of a continuous-run installation, is featured in the new 5000-Line of industrial fluorescent lighting fixtures just announced. This device makes possible the use of only nine 100-watt fixtures in a 50-ft. run instead of ten. Lightweight channels conform to government conservation orders. Reflectors are non-metallic. The fixtures may be had in two 40-watt, three 40-watt and two 100-watt sizes. (Figure 2.) Martin-Gibson Co., 999 Harper Ave., Detroit, Mich.

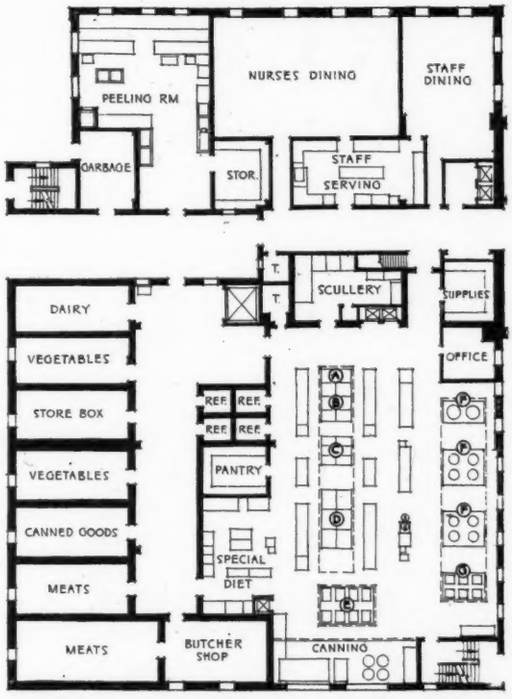
(Continued on page 84)

No. 1

of a series of case histories of successful mass-feeding operations

KITCHEN PLAN NO. 1: A STATE HOSPITAL KITCHEN

Below is the kitchen floor plan of a state hospital with a present 3600 population, designed for 6000.



COOKING EQUIPMENT USED:

- (a) 2 Broilers
- (b) 6 Ranges
- (c) 6 Fryers
- (d) 6 NO. 952 BLODGETT OVENS
- (e) 8 Meat Steamers
- (f) 10 Stock Kettles
- (g) 6 Vegetable Steamers

DESIGNED BY RUSLANDER AND SONS, INC., FOR G. W. STICKLE, ARCH.

THE SIX BLODGETT ROASTING OVENS in this installation are our No. 952, providing twelve separate 12"-high roasting chambers with 112 sq. ft. of shelf area. They can roast upwards of 1800 lbs. of meat at each load. They are used for preparation of meats, fish, vegetables, puddings, etc.

The G. S. BLODGETT CO., Inc.

53 Maple Street, Burlington, Vermont

KEEP THIS FOR HANDY REFERENCE

Like mass production in a factory, the mass production of food in hospitals, schools, industrial cafeterias, commercial restaurants and institutions calls for equipment especially designed and arranged to perform each cooking operation with maximum efficiency.

Most important items of equipment in mass production of food are the roasting and baking ovens used for rapid, economical cooking of meats, fish, vegetables, puddings, etc.

This is the first in a series of twelve case histories of successful mass feeding operations, each designed to make maximum use of modern cooking equipment, including the roasting and baking ovens manufactured by The G. S. Blodgett Company, Inc.

These case histories are placed in your hands in the belief that you will find them helpful in designing and specifying both for wartime mass-cooking operations and for the V-Day building projects on your boards.

Quite naturally, we hope that your study of these actual solutions to specific mass feeding problems will acquaint you with the very definite advantages of Blodgett equipment.

(Continued from page 82)

Another industrial type fluorescent lighting fixture features a reflector anchored to the top-housing with a pair of "Captive Latches" which release with a simple quarter-turn. The ballast is completely enclosed for added cleanliness and safety. Chain hanging ears on 43 in. centers, ½ in. knockouts on 18 in., 24, 30 and 36 in. centers, channel for adjustable slide-grip hangers, and knockout for levolier pull chain switch are said to make installation under every condition both speedy and economical. Hanging accessories and easily installed joining straps are available. Three models are offered, using two and three 40-watt lamps and two 100-watt lamps. All fixtures come complete, ready for installation, including lamps and starters. Sylvania Electric Products Inc., Ipswich, Mass.

Also designed in compliance with the latest WPB steel limitation order is the new series of War Model Day-Line fluorescent industrial fixtures announced by another company. In these fixtures the wiring channel and end boxes which incorporate the socket saddles are of steel welded together. Non-metallic reflectors and channel covers are finished in baked enamel. They are held in place by two wing-type latches that are permanently attached to the reflector and do not require tools for operation. Ballasts are mounted below the channel to provide better air circulation for cooler operation and longer life.

These fixtures are listed as single units for two 40-, three 40- and two 100-watt lamps, with couplings for making continuous installations. A complete line of accessories is offered. DayBrite Lighting Inc., 5411 Bulwer Ave., St. Louis, Mo.

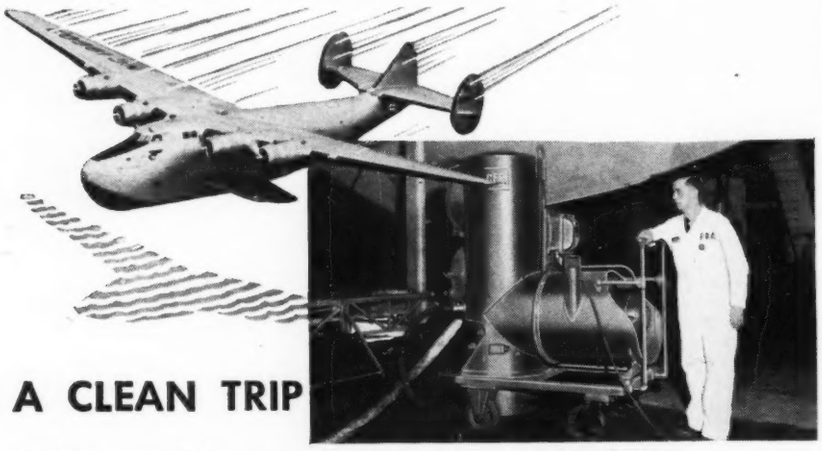
CONCRETE HARDENER

A penetrating concrete hardener just announced eliminates the need of etching to neutralize the alkaline content of concrete, yet penetrates and carries color deep into the cement, according to the manufacturers. This product, Dye-Crete Color Hardener, is available in six colors and clear. It can be applied over wet, new or old concrete, and dries overnight. Developed for both interior and exterior use, Dry-Crete is said to stop dusting and to maintain uniform color with wear. The Wilbur and Williams Co., Park Square Bldg., Boston, Mass.

AIR-VOLUME CONTROL

Designed to provide noiseless, adjustable control of air volume, pressure and distribution across a supply outlet, a unit known as the Volocitrol has friction pins on each louver allowing it to be set by hand. A fire-proofed felt edging strip to fit between the frame of the Volocitrol and the duct is furnished as standard. Barber-Colman Co., Rockford, Ill.

(Continued on page 86)



A CLEAN TRIP
WITH PAN AMERICAN AIRWAYS • • •

Also used for

- CLEANING
- RECLAIMING
- MOVING MATERIALS

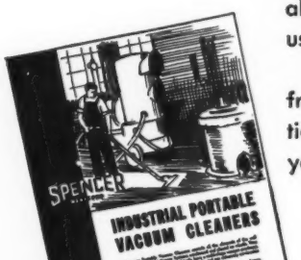
In the

- PRODUCTION OF ALL ESSENTIAL WAR MATERIALS

Few people realize the extent of reconditioning between trips of huge ocean clippers. Every Pan American clipper starts out spotlessly clean. Spencer 5 HP Portable Vacuum Cleaners with long hose lines reach every spot, not only the floors, rugs, and furniture, but all the machinery.

Most of the big airplane manufacturers also use Spencer Vacuum. Babbitt is picked out of engine heads, stray bolts, nuts, etc., removed from wings and fuselages, bench cleaning is speeded, and the finished job is cleaned before delivery. It is ideal also for the manufacture of the many instruments used in all forms of modern transportation.

Spencer Vacuum for industrial service ranges from ¾ to 100 horse power, portable and stationary. There's a Spencer representative near you. Ask for the Spencer Bulletins.



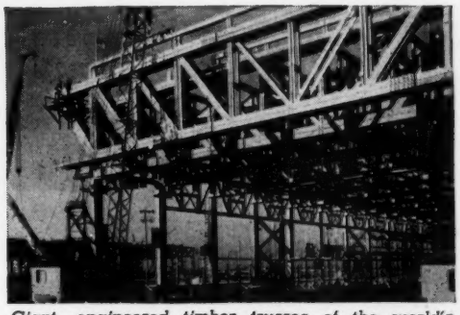
THE SPENCER TURBINE COMPANY
HARTFORD, CONN.

243 A

SPENCER HARTFORD VACUUM CLEANING
THE SPENCER TURBINE COMPANY, HARTFORD, CONN.

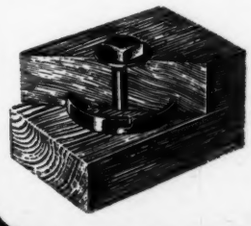
FREEDOM IS NOT FREE—IT IS PRICELESS ★ *BUY WAR BONDS*

27,000,000 Feet of Lumber



Giant, engineered timber trusses of the world's largest timber-built factory, designed by The Austin Company, of Chicago, engineers and builders.

Up from the log pond into the sawmill. Wood is contributing to victory on every fighting front. At home, lumber prefabricated under the TECO Connector System of timber engineering has replaced metal in thousands of heavy war structures such as the aircraft assembly plant shown above. Engineered timber is destined to play a leading role in the reconstruction era to come. You, also, can design in timber with TECO—for strength, durability, and economy. Write today for our literature.



The ***TECO*** Ring Connector spreads the load on a timber joint over practically the entire cross-section of the woods . . . brings the full structural strength of lumber into play.

TIMBER ENGINEERING COMPANY

NATIONAL MANUFACTURERS OF ***TECO*** *TIMBER CONNECTORS AND TOOLS*

WASHINGTON, D. C. · **PORTLAND, OREGON**

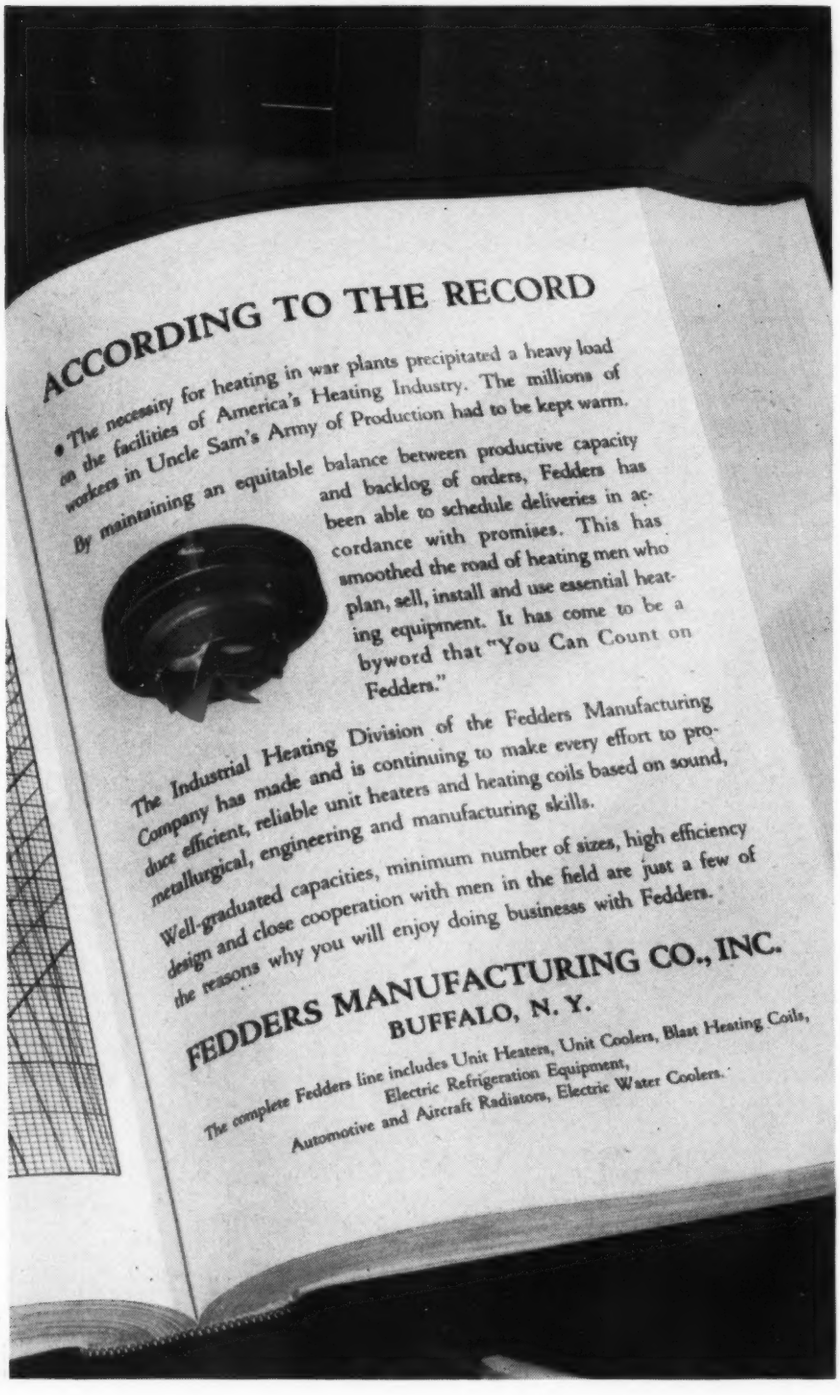
WOOD GOES TO WAR — An MGM Technicolor short by James A. Fitzpatrick. Ask your theater when you can see it.

(Continued from page 84)

AIR EXHAUSTER

A newly developed roof ventilator known as the Breidert Air-X-Hauster has V-shaped faces which create a positive syphon at the vertical opening, sucking out the warm air inside. This syphonic action is caused by the wind being deflected away and across the openings. Regardless of the wind direction, it is claimed, it is impossible for the action to be reversed. Even if the wind should strike directly into the openings, another set of baffles inside the Air-X-Hauster repeats this positive syphon action.

Guaranteed by the manufacturers, the Air-X-Hauster has no moving parts and is said to absolutely prevent downdrafts and to arrest condensation or sweating. Several types are available, all of which may be equipped with exhaust fans where heavy vapors are to be lifted or unusually large quantities of air are to be moved. G. C. Breidert, 3328 S. Central Ave., Los Angeles, Calif.


ACCORDING TO THE RECORD
• The necessity for heating in war plants precipitated a heavy load on the facilities of America's Heating Industry. The millions of workers in Uncle Sam's Army of Production had to be kept warm.
By maintaining an equitable balance between productive capacity and backlog of orders, Fedders has been able to schedule deliveries in accordance with promises. This has smoothed the road of heating men who plan, sell, install and use essential heating equipment. It has come to be a byword that "You Can Count on Fedders."
The Industrial Heating Division of the Fedders Manufacturing Company has made and is continuing to make every effort to produce efficient, reliable unit heaters and heating coils based on sound, metallurgical, engineering and manufacturing skills.
Well-graduated capacities, minimum number of sizes, high efficiency design and close cooperation with men in the field are just a few of the reasons why you will enjoy doing businesss with Fedders.
FEDDERS MANUFACTURING CO., INC.
BUFFALO, N. Y.
The complete Fedders line includes Unit Heaters, Unit Coolers, Blast Heating Coils, Electric Refrigeration Equipment, Automotive and Aircraft Radiators, Electric Water Coolers.

WOODEN SPRINGS

To replace the steel springs no longer procurable because of war shortages, a number of wooden springs are being developed for use in upholstered furniture and bedding.

Among these is the Victory or "V" Spring of the School of Design in Chicago, on which experiments were started in 1937. L. Moholy-Nagy, Director of the School, reports that according to tests the wooden springs are as durable as metal springs and have the added asset of being less susceptible to loss of flexibility from fatigue.

A bed spring developed by Leonard Carlsen and Jack Patterson of San Francisco is made of two plies of oak (grain of each ply parallel) glued with Lauxein Glue. An initial order for 50,000 of these springs has been given to the Hummel Furniture Mfg. Co. of Berkeley, Calif.

ASBESTOS-CEMENT LOCKER SHEATHING

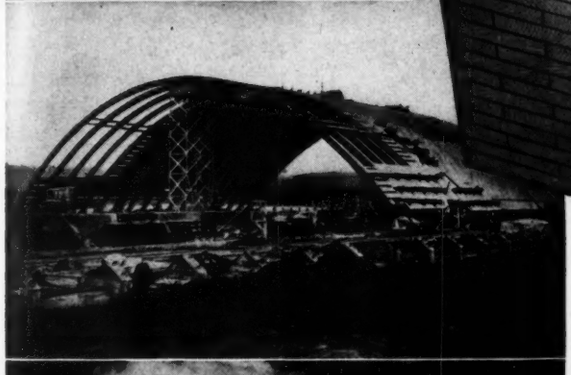
Recommended by the manufacturers for plant locker construction is Careystone (Asbestos-Cement) Flat Sheathing. This material, produced by combining selected Portland Cement and asbestos fibers under pressure, is said to result in a stone-like substance which will not rust, rot or corrode, and is fire and rodent proof. It is available in sheets 48 by 96 in., and ⅜ in. thickness is recommended for locker construction. The Philip Carey Mfg. Co., Asbestos-Cement Products Dept., Lockland, Cincinnati, Ohio.

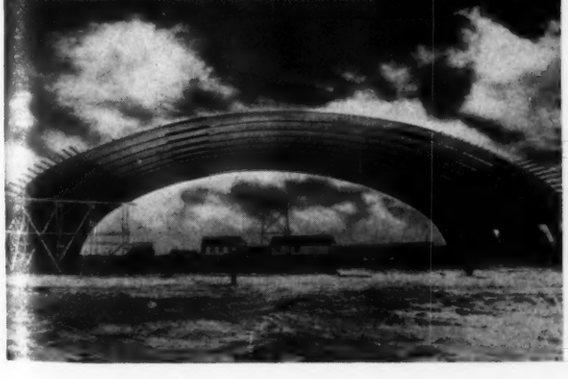
ALLOY SPRAYER

Recently announced is an alloy sprayer said to provide a low-cost, rapid means of applying a protective metal coating to metal assemblies or structures, recoating areas burned by welding, patching or repairing small

(Continued on page 88)

Hangars FOR PLANES...





speedily and economically erected with

RILCO *Laminated* WOOD ARCHES

In this age of air, the nation's need for hangars to house and service its planes is urgent. To meet present rush needs for these vast, post-free structures, Rilco is engineering and factory fabricating glued laminated wood arches and delivering them to the job site ready for fast erection.

Rilco's record of delivery *on time* has made it possible for essential structures to be finished on schedule. Rilco is geared, through its five modern plants, to produce and deliver for priority construction.

Whatever the structure — hangars, drill halls, factories, storage buildings—*wherever the location*, Rilco can supply the size and type of structural framing members needed—glued laminated roof arches, trusses and beams for buildings with post-free spans up to 200 feet.

Complete engineering data, design cooperation and consultation is available to architect and engineer. Information on Rilco Laminated Products will be sent on request. Write for booklet describing in clear detail the factory-fabricated Rilco Glued Laminated Arches.

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RILCO

DESIGNERS AND FABRICATORS OF ENGINEERED WOOD PRODUCTS FOR A WIDE VARIETY OF USES

RILCO LAMINATED PRODUCTS, Inc.

A Weyerhaeuser Institution

General Offices: FIRST NATIONAL BANK BUILDING, SAINT PAUL, MINNESOTA

Eastern Division: 221 Cunningham Avenue, Wilkes Barre, Pennsylvania

Southern Division: 3200 Grand Avenue, Dallas, Texas

(Continued from page 86)

areas in large galvanized assemblies where the coating has been damaged, and, in addition, providing a good base for painting.

According to the manufacturers, an actual tinning of the sprayed metal with the base metal is effected by this process, eliminating under certain conditions sandblasting or other extensive preparation of the surfaces of the base metal. The surface to be protected is sprayed with a coating of Galv-Weld metal by means of an Alloy-Sprayer gun. The gun is a portable, self-contained unit having a thermostatically controlled metal melting pot and a means of atomizing and spraying the melted metal. It is operated by air under pressure in much the same manner as a paint sprayer. A trigger control button on the handle is pressed during the actual spraying. The Alloy-Sprayer Co., 2040 Book Bldg., Detroit, Mich.

FAUCET SEAT AND WASHER

An all-in-one faucet seat and washer, the No-Leak, is said to prevent water waste, drips, lost heat and stained porcelain. It expands and locks in the faucet, eliminating screw and washer. The manufacturers report that it can be used for either hot or cold water, and can be installed readily by anyone. A patented brass lining feature prevents shrinking. Keystone Brass and Rubber Co., Inc., Broad St. and Lehigh Ave., Philadelphia, Penn.

CAMOUFLAGE PAINT

A new camouflage paint especially developed to prevent detection by the infra-red aerial camera not only visibly matches the surrounding natural colors, but also, by equalizing their infra-red reflectance powers, matches them in the infra-red photo as well. The paint is available in dark green, olive and field drab, loam black, earth red, brown and yellow. E. I. du Pont de Nemours and Co. (Inc.), Wilmington, Del.

TO STOP LEAKS

A quick setting, waterproof material called Stop-It has been developed to seal openings in masonry walls and floors. The manufacturers recommend it especially for repairing below-ground surfaces that are seeping water, for filling in where the floor meets the wall, and for building up broken and crumbled areas in concrete walls or tiers. Tamms Silica Co., 228 N. LaSalle St., Chicago, Ill.

EFFLORESCENCE TEST

To test efflorescence in brickwork resulting from soluble salts coming from the Portland Cement used in mortars, a standard wick known as Efflorwick has been developed. Made of purified brick clay, these wicks are made as nearly identical as possible to permit the accurate comparison of the efflorescent tendencies of different materials. The New York State College of Ceramics at Alfred University, Alfred, N. Y.

This is the Wing REVOLVING Unit Heater. Located overhead, the air is drawn from the ceiling, passed through the heating element and projected through slowly revolving discharge outlets to the working level, bringing a sensation of fresh, live, invigorating warmth to workers.

WITH increasing emphasis on employee morale, Wing Revolving Unit Heaters are more important than ever before. Because they revolve, Wing Heaters gently circulate the warm air around bulky machinery and other obstacles and into otherwise cold corners, assuring a comfortable temperature at every part of the working level. The gentle movement of the air brings a sensation of fresh, live, invigorating warmth to workers. It tends to speed their efforts and at the same time make them more accurate in their work.

Write for a copy of Bulletin HR-2, the complete story of the problem of heating modern industrial plants.

WING TIPS: Save critical materials and installation time vital to Victory by installing Revolving Unit Heaters.

L. J. Wing Mfg. Co.

151 W. 14th ST., NEW YORK 11, N. Y. FACTORIES: NEWARK, N. J.

WING *Revolving* **UNIT HEATERS**

UNIT HEATERS • VENTILATING FANS • EXHAUSTERS • BLOWERS • TURBINES

GOLD BOND ACOUSTICAL MATERIALS

reduce noise . . . increase efficiency at Curtiss-Wright

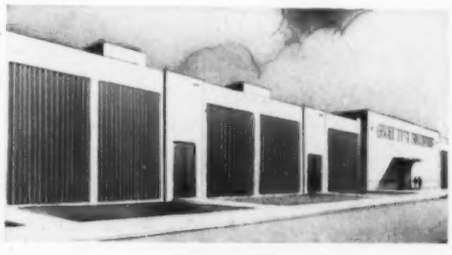
CONFERENCE ROOM

TYPICAL CORRIDOR

AT the Curtiss-Wright Airplane Division in Buffalo, they've just completed one of the most modern aeronautical research laboratories in the world. It's a marvel of design for its purpose, and National Gypsum is proud that Gold Bond Acoustical materials were chosen to sound condition offices, workrooms and corridors.

Gold Bond Econacoustic, which was used on this job, is available now for all types of military and essential civilian buildings where noise reduction is desirable.

ANOTHER WAR USE OF GOLD BOND ACOUSTICAL MATERIALS. The roar of airplane engines being tested would disturb work and rest of people for miles around if test stacks were not sound conditioned. Many of these interesting new engine test buildings are sound-insulated with Gold Bond Acoustimetal-B.



BUILD BETTER WITH

Gold Bond

Everything - for walls & ceilings

More than 150 different products for MODERN CONSTRUCTION AND WAR PRODUCTION

WALLBOARD...LATH...PLASTER...LIME METAL PRODUCTS...WALL PAINT INSULATION...SOUND CONTROL

WRITE TODAY FOR COMPLETE DATA AND TECHNICAL INFORMATION

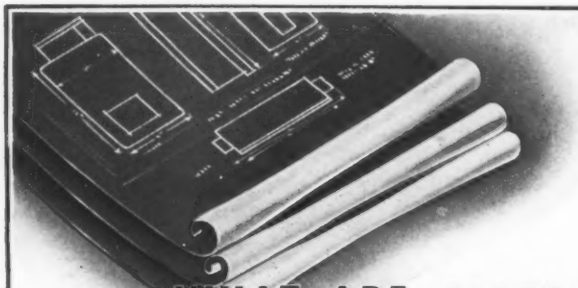
NATIONAL GYPSUM COMPANY . . EXECUTIVE OFFICES, BUFFALO, N. Y.

21 Plants from Canada to the Gulf . . . Sales offices in principal cities

(Continued from page 12)

mate Institute," designed to acquaint the public with the best equipment and methods for producing indoor comfort, were announced recently by Paul B. Zimmerman, Vice President, Airtemp Division, Chrysler Corporation, speaking before the National Warm Air Heating and Air Conditioning Association. The Indoor Climate Institute program, which has been under consideration by a steering committee representing all divisions of the heating industry for several months, will be presented to other leading trade associations at the earliest meetings of these groups.

The Institute program will be educational and promotional in nature, and will not supersede any of the operating functions of the various trade associations in the heating and air conditioning industry. The Institute contemplates the issuance of identification seals, to be presented by the national organization to manufacturers of automatic heating and air conditioning equipment meeting I.C.I. standards, and by the local organizations to installing dealers and contractors handling work in accordance with the best established local practice.



WHAT ARE *you* DOING ABOUT POST-WAR PLANNING?

Practical, well-laid post-war plans are the immediate need of all industry. Many important new developments, applied through intelligent planning, will bring new efficiency and comfort to a world at peace.

If dependable temperature or pressure control is a factor in the successful application of your product or service, it will pay you to investigate the White-Rodgers Hydraulic-Action principle and other new developments in temperature and pressure control.

Because of the importance of post-war plans to American industry we have prepared a "Post-War Planning Checklist" which may be of assistance in setting up your own post-war program. We shall be glad to send you a copy upon request.

HYDRAULIC ACTION CONTROL

WHITE-RODGERS ELECTRIC CO.
1202G CASS AVENUE • SAINT LOUIS, MISSOURI
Controls for Heating • Refrigeration • Air-Conditioning

CANADIAN ARCHITECTS URGE PLANNING AUTHORITY

To help crystallize definite national policy on postwar reconstruction and community planning, and to initiate projects promptly when the war ends, The Royal Architectural Institute of Canada has proposed to Prime Minister Mackenzie King the establishment of a central planning authority in the form of a new government department with its own minister.

The proposal calls for immediate setting up of the authority to frame a policy, compatible with provincial rights, on five main phases:

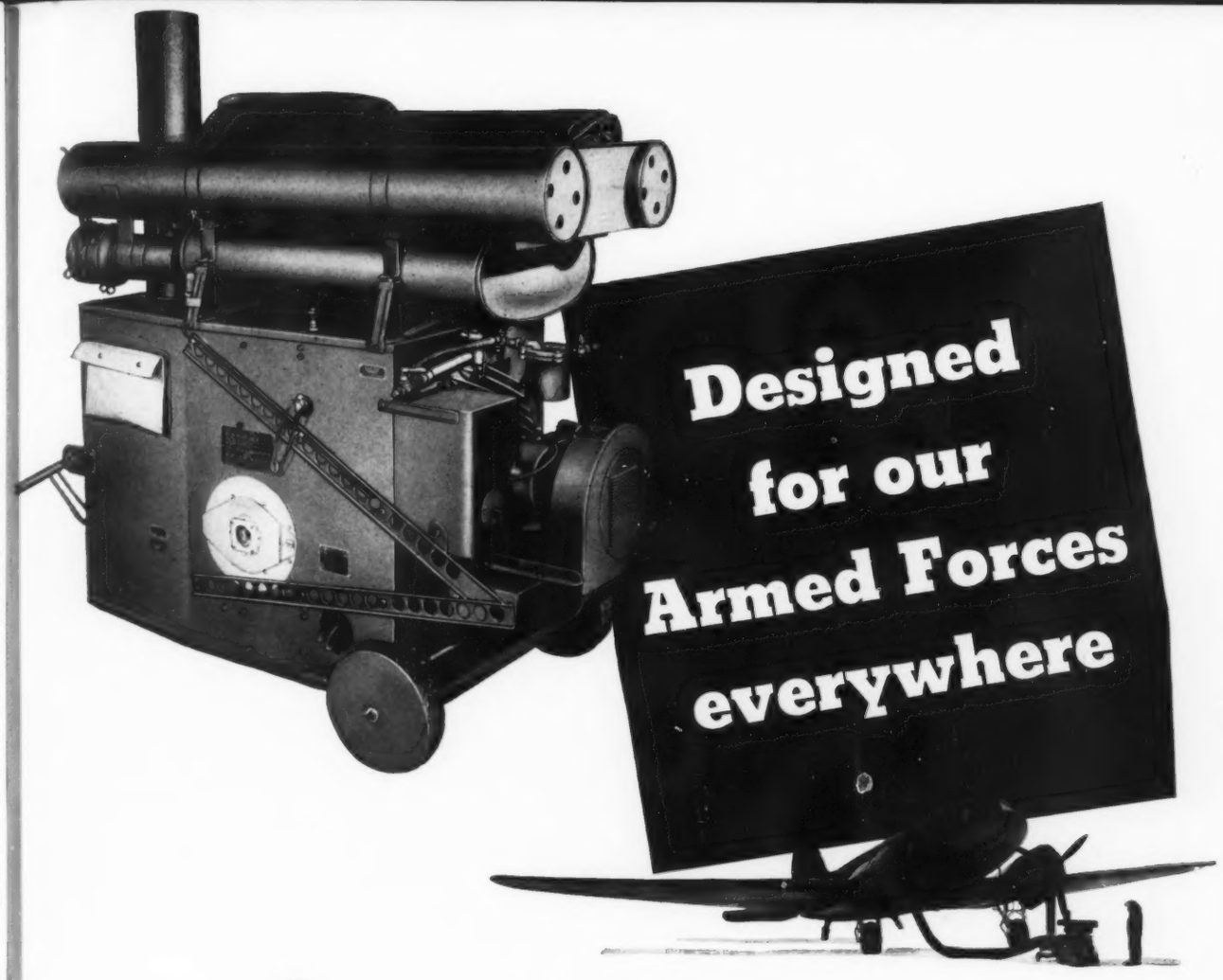
1. Use and development of land;
2. Establishing conditions for development of construction programs;
3. Assisting provinces, municipalities and private interests in acquisition of land, planning, development or redevelopment;
4. Encouraging creation of provincial, regional and local planning boards for establishment of master plans;
5. Cooperating with all governmental authorities in regulating volume and distribution of public construction projects to meet local and economic needs.

The Institute suggests the authority should have a governing council representative of the principal professions, industry, finance and business, labor, farming and social service. It is noted that Britain already has established a Ministry of Town and Country Planning.

CONFERENCE ON PLANNING

A two-weeks Conference on City and Regional Planning will be held at the Massachusetts Institute of Technology, Cambridge, Mass., from September 7-18, 1943. Sponsored jointly by the

(Continued on page 92)



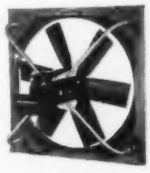
SINCE the advent of the National emergency over three years ago, The Herman Nelson Corporation has been developing special equipment for our war effort. The Herman Nelson Self-Powered Portable Heaters were designed particularly for our armed forces, and were successfully used as early as last winter at Army and Navy Bases everywhere.

These portable, light-weight, sturdy, self-powered ground heaters are mainly used for preheating aircraft engines in severe, cold weather. They have successfully produced a steady flow of heated air in temperatures as low as 65° below zero.

In addition, these units have served the armed forces well by supplying heat for small buildings, tents, freight car interiors, repair shops and many other applications where portable, self-powered heat is required.

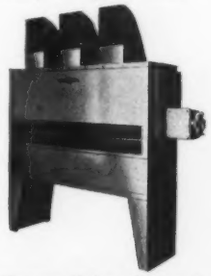
At the same time The Herman Nelson Corporation has been furnishing its standard peace-time products, such as hiJet Unit Heaters and Autovent Fans and Blowers, for use in Army-Navy Projects and War Plants throughout the country.

Herman Nelson Horizontal Shaft Propeller Fan Type hiJet Heaters



Autovent Direct Drive Propeller Fans

Autovent Type HB Blowers



Herman Nelson Blower Fan Type hiJet Heaters

THE HERMAN NELSON CORPORATION ***MOLINE, ILLINOIS***

Autovent Fan & Blower Division, Chicago, Illinois

Manufacturers of Quality Heating, Ventilating and Air Conditioning Products

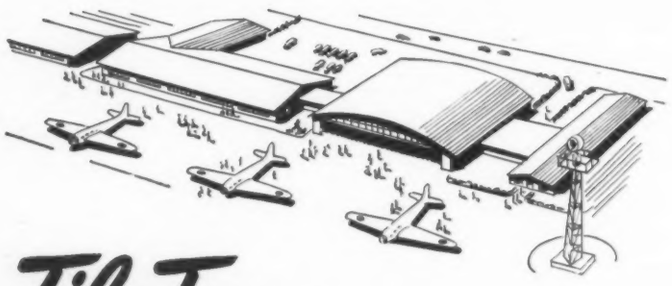
(Continued from page 90)

Institute and the American Society of Planning Officials, the Conference will be open to men and women who have had practical experience in planning or in a related professional field, including planning technicians, members of state or municipal planning commission and housing authorities, and staff members of engineering or public works departments.

Seminars will be held each morning and afternoon, beginning Tuesday, September 7, and will cover such subjects as planning and zoning legislation, sub-division control, traffic and transportation, housing, recreation, comprehensive plans for cities and regions, and urban redevelopment. Emphasis will be placed on technical and administrative procedures and the application of approved planning standards rather than on a generalized discussion of the various planning problems for which solutions are needed. The seminars will be conducted by Professors Frederick J. Adams and Flavel Shurtleff, assisted by visiting lecturers on special topics.

Applications and requests for further information should be sent to Professor Frederick J. Adams, Division of City Planning, Massachusetts Institute of Technology, Cambridge, Mass. Applications must be received by August 31.

They train for the Air... on



Tile-Tex Floors

They are setting a terrific training pace at Army and Navy Air Bases these days. That's why Administration Buildings, Classrooms, Dining Halls, Dispensaries, Locker Rooms and Recreational Areas are using Tile-Tex floors. Such areas demand a floor that will withstand severe usage and at the same time look attractive with only minimum maintenance.

Tile-Tex, made from long-wearing asphalt and asbestos, qualifies as such a flooring. It can be installed at or below grade level—replacements can be made without interfering with adjoining areas. Tile-Tex is still available with reasonable promptness in a wide range of colors, shapes and sizes —and at a reasonable low first cost.

We'd like to give you more specific information on the use of Tile-Tex in Military Air Bases. Write us for further data and the name of your nearest Tile-Tex contractor.

★ The Tile-Tex Company

101 Park Avenue, New York City • Chicago Heights, Illinois

SERVICE MEN'S FEES

A law recently enacted by the Texas Legislature provides that registered architects who entered military service in the Army, Navy, Marine Corps or Coast Guard subsequent to October 1, 1940 and were in good standing at the time shall be exempt from license renewal fees until honorably discharged, and then exempt for the current fiscal year. Beginning this month, renewal cards will be automatically issued without fee to all such architects whose current addresses are on file with the State Board of Architectural Examiners.

CONSTRUCTION CONTRACTS

Construction contracts awarded in the 37 eastern states during the month of April amounted to $303,371,000, according to F. W. Dodge Corporation. This figure represented declines of 11 per cent from the preceding month and of 39 per cent from April of last year.

This construction total represented mixed trends. Heavy engineering contracts, amounting to $127,723,000, were 4 per cent ahead of March and 25 per cent greater than the contract total for April, 1942. Residential building contracts, amounting to $79,434,000, increased 11 per cent over the preceding month, but declined 51 per cent from April of last year. Heaviest decline was registered in non-residential building contracts, due to a drop in the manufacturing plant contract total from $145,064,000 in April, 1942 to $40,652,000 in the same month this year. New industrial plant construc-

(Continued on page 94)

WANTED-
WITHOUT DELAY
Plant administration buildings, factories, hangars. Must be constructed of non-critical materials. Must be erected and available for occupancy "overnight." Long service life—extending into post-war period—desirable.
* * * *

"CZC"-treated lumber does these jobs best!

Factories, housing projects, and military establishments have gone up *fast* the nation over. And the use of easy-to-fabricate Chromated Zinc Chloride-treated wood has saved weeks and often months of construction time while conserving critical metals.

"CZC"-treated wood has many distinctive structural advantages. Its durable protection against decay and termites extends the useful life of structures many times—permits the use of less expensive lumber—and reduces the need for oversizing to allow for reduced strength due to decay. Of great importance, too, it has definite, measurable fire-resistant properties.

"CZC"-treated wood is reasonable in cost and retains the fabrication advantages of untreated wood—remaining clean to handle, odorless and paintable.

Check up on "CZC"—the wood preservative that can help you meet wartime construction problems, and prepare for post-war building. E. I. du Pont de Nemours & Co. (Inc.), Grasselli Chemicals Department, Wilmington, Delaware.

Get this valuable booklet

Here's a handy file-size booklet that's packed with facts about "CZC." It's free. Write for it.

DU PONT
REG. U. S. PAT. OFF.

CZC

CHROMATED ZINC CHLORIDE

WOOD PRESERVATIVE

BETTER THINGS for BETTER LIVING . . . THROUGH CHEMISTRY

(Continued from page 92)

tion has been tapering off since the peak was reached last September, when WPB announced that emphasis in 1943 would be on production of war materials rather than on construction of new facilities. In spite of this curtailment, it is generally understood that there will be continuing need for certain specialized types of new plant facilities.

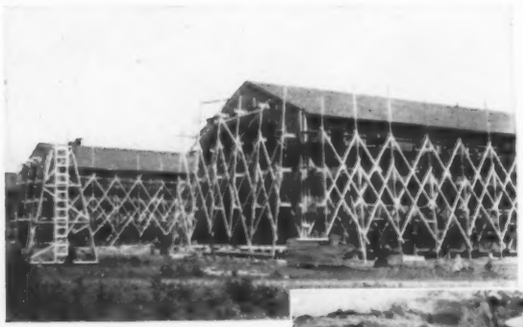
DEMOLISHING OF WAR HOUSING URGED

Temporary war housing, if allowed to stand after the emergency need has passed, will develop into "ghost towns" and "slum areas" and will have a most undesirable and harmful effect on our economy, President Fritz Burns of the National Association of Home Builders of the U. S. told the House Committee on Public Buildings and Grounds.

"This housing," Mr. Burns pointed out, "is being built to meet an emergency, with emphasis on speed and economy in the use of critical materials, to provide temporary shelter only, and is so flimsy in character as to make it impractical and unwholesome for permanent occupancy. It must not be allowed to become a permanent part of any community."

Mr. Burns urged the Committee to amend the Lanham Act so as to provide a reserve fund from rents to insure the demolition of this housing shortly after the termination of the war, excepting for those few projects essential to early postwar production.

VERSATILITY



Navy Barracks

Navy barracks nearing completion. Part of approximately 200 similar structures totaling around $10,000,000 and housing 30,000 men. Part of $50,000,000 Sampson Naval Training Station.

Sewer Disposal Plant

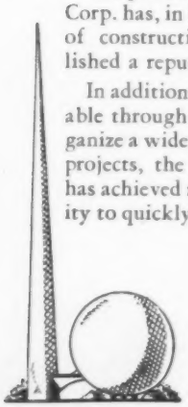
Interior view of one of the six huge concrete tanks which, with other installations, constituted the Naval Station Sewerage Disposal Plant.

From BARRACKS to SEWAGE DISPOSAL PLANTS— Reservoirs to Submarine Cable laying . . .

• The John A. Johnson Contracting Corp. has, in its nearly half a century of construction experience, established a reputation for VERSATILITY.

In addition to its staff of Engineers able through long experience to organize a wide variety of construction projects, the Johnson Organization has achieved recognition for its ability to quickly plan large operations, set up organization and field offices practically over-night, start the flow of materials to the site by all-night organization work, and marshal the necessary workers up to 20,000 men and involving payrolls above the million dollar-a-week mark.

Send for Brochure No. 33 outlining our work on $130,000,000 worth of U. S. Government war projects.



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ELECTRICAL ENGINEERS ELECT

Nevin E. Funk, Vice President in Charge of Engineering, Philadelphia Electric Company, Philadelphia, Pa., was elected president of the American Institute of Electrical Engineers for the year beginning August 1, 1943.

Vice presidents elected were W. E. Wickendon, Cleveland, Ohio; C. W. Ricker, New Orleans, La.; L. A. Bingham, Lincoln, Nebr.; J. M. Gaylord, Los Angeles, Calif.; W. J. Gilson, Toronto, Canada. Directors elected were C. M. Laffoon, East Pittsburgh, Pa. (re-elected); C. W. Mier, Dallas, Tex.; S. H. Mortonsen, Milwaukee, Wis. W. I. Slichter, of New York, was re-elected National Treasurer.

ARCHITECT OPENS NEW OFFICE

Morris Lapidus, architect and designer, has announced the opening of his new offices at 1841 Broadway, New York City. Mr. Lapidus was formerly associated with Ross-Frankel, Inc. of New York.

NORBERT BROWN JOINS HOUSING AGENCY

Norbert Brown, editor of the *Real Estate Record and Builders' Guide* since 1929, and general manager as well since 1939, resigned on July 1 to accept a position as Field Director of the National Committee on the Housing Emergency, Inc. Mr. Brown will be engaged in the selection of sites for housing developments to be erected by

(Continued on page 96)

Combination of INSULUX No-Glare and Light Directional block result in even distribution of daylight inside plant. INSULUX clear block in center of panels permit some vision.

Plans for postwar architecture aren't all on blueprints and drafting boards.

Here, for example, is a new midwestern war plant built of brick, concrete, and INSULUX Glass Block. From it, architects get a preview of what will be done tomorrow in controlling conditions within industrial plants:

Interiors will be light-conditioned. INSULUX Light Directional block diffuse, direct, and distribute daylight throughout interiors.

INSULUX Glass Block are four inches thick, and hollow. Their high insulating value helps regulate temperature and humidity; air conditioning and heating costs are lower; precision machines are guarded from dust, dirt, moisture infiltration.

Today's growing use of INSULUX Glass Block in new and rehabilitated industrial plants is indicative of the future. Make sure your files have our up-to-date information on light transmission and insulation.

Write: INSULUX Products Division, Dept. 91,
Owens-Illinois Glass Company, Toledo, Ohio

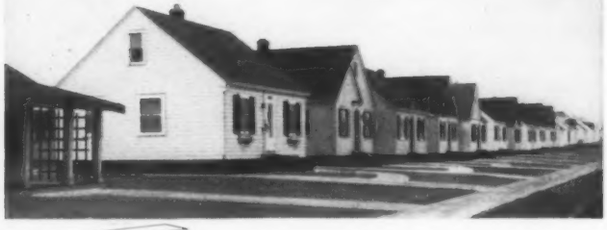
OWENS-ILLINOIS
INSULUX
GLASS BLOCK

For LOW COST INSURANCE
--against the danger of scalding water in shower baths and wash sinks
1 POWERS CONTROLLER will SAFEGUARD as many as 25 showers against scalding water

Use Powers thermostatic water mixing valves for Group Showers, Wash Sinks, Hot Water Line Control and Industrial Processes. Capacities up to 2,650 g.p.m. Write for Circular 3017. THE POWERS REGULATOR COMPANY, 2752 Greenview Avenue, CHICAGO—Offices in 47 Cities.

POWERS WATER TEMPERATURE CONTROL

33,000 KITCHENS MUST BE RIGHT!



AMERICA'S LEADING BUILDER OF WAR-TIME CABINETRY

★ As its contribution to war and defense housing, Kitchen Maid has already sold more than 33,000 kitchens for projects of all types! Such a record is further evidence that this famous factory-built cabinetry of *composite construction* is *right* for practically every application—proof that it meets the most rigid present-day requirements for adaptability, ease of installation, price, and delivery. But more than that! Kitchen Maid's wide experience in this advanced cabinetry design can be of great value to you on any war housing job. Write for facts now.

Kitchen Maid Corp., 637 Snowden St., Andrews, Ind.

KITCHEN MAID
CABINETRY OF COMPOSITE CONSTRUCTION

THE RECORD REPORTS

(*Continued from page* 94)

private builders for Negro families.

Mr. Brown was a member of the Mayor's Advisory Committee on the Real Property Inventory of New York in 1934, and has served also on the Housing Management and Old-Law Housing Committees of the Citizens Housing Council of New York, Inc. He is a member of the Building Laws and Regulations Committee of the Commerce and Industry Association of New York, and has been building economics consultant to the ARCHITECTURAL RECORD.

"AIRWAYS TO PEACE" EXHIBITION

Today's great panorama of the world of the air, from its beginning in ancient myths of bird-men to its present struggle for air supremacy and its future possibilities for world peace, is the theme of "Airways to Peace: An Exhibition of Geography for the Future," on view at the Museum of Modern Art, New York City, through October 17.

Installed in dramatic sequence, the exhibition fills the entire second floor of the museum, and consists of maps, spheres, models, photographs, drawings, paintings and photo-murals. Among the outstanding items shown are the fifty-inch globe which President Roosevelt has lent the exhibition for a period of two weeks, and a replica of the oldest (1492) terrestrial globe extant. The text, mounted on the walls as a running commentary on the various sections of the exhibition, is by Wendell L. Willkie.

ADDITIONAL WPB NEWS

Inquiries from prospective applicants for permission to construct industrial facilities have multiplied within the last few weeks, the Construction Advisory Service of the WPB Facilities Bureau has reported. Due to the general curtailment in facilities construction, companies desiring new facilities have been seeking information as to what considerations now govern the granting of authority to begin construction and obtain appropriate priorities.

The Construction Advisory Service is an expansion of services previously available to advise manufacturers and builders on the basis of preliminary drawings and approximate listings of building materials before they submit formal applications to begin construction. Applicants, their architects, engineers, and other employees may avail themselves of these services before preparation of final drawings and specifications. Inquiries regarding them should be addressed to Howard W. Cutler, Chief, Construction Advisory Services, Project Division, Facilities Bureau, War Production Board, Washington, D. C.

A CORRECTION

Our attention has been called to the fact that in this department's discussion in the June issue (page 7) of the proposed war housing program to accommodate war worker migration during the next 12 months, the number of dwelling units which it would be necessary to construct was erroneously given as 940,000. Actually, the tentative program developed by NHA would involve the construction of only 250,000 accommodations, with approximately 80,000 additional family units provided through conversion of existing structures, and the remaining 610,000 units of the estimated need supplied in existing dwellings without alteration.

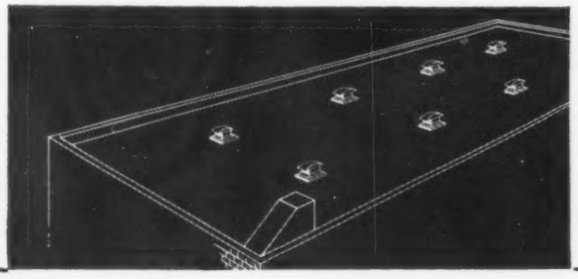
Carrier

WAR PLANT VENTILATORS

Installed in Roof . . .
No Floor Space Needed!

War plant workers need air free from excessive heat or humidity to maintain maximum production. In warm weather, extra quantities of outdoor air must be provided for ventilation to prevent indoor temperatures from soaring. In winter weather, the air for ventilation must be tempered to prevent drafts and cold areas.

Carrier War Plant Ventilators replace hot, humid air in summer—temper ventilating air in winter. They are available in 3 types to provide blackout and other factory buildings with uniformly distributed air for correct ventilation.



1. **Carrier Exhaust Ventilators** (shown above) remove hot, humid air from the plant, exhausting it at the roof.

2. **Carrier Supply Ventilators** replace the excessively hot plant air with relatively cool air from outdoors, drawing the air in at the roof and supplying it with uniform circulation to working areas.

3. **Carrier Tempering Ventilators** warm and deliver air to the plant, drawing the air in at the roof and supplying it with uniform circulation to the working areas, thereby providing the needed ventilation with tempered air to prevent drafts and cold spots in the plant during cold weather.

Features: Critical materials conserved by use of non-ferrous panels. No extra "preparedness" for blackout plants—no light transmission or reflection in blackouts. No protective housing or elaborate roof supports. Built to withstand weather. Light in weight. Designed to become a permanent part of the building. Constructed to keep out rain and snow.

Mail coupon for complete information. Learn how Carrier War Plant Ventilators can be used to advantage in your plant.

CARRIER CORPORATION, Syracuse, N. Y.

Please send literature on Carrier War Plant Ventilators. Desk 28-G

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Company.....

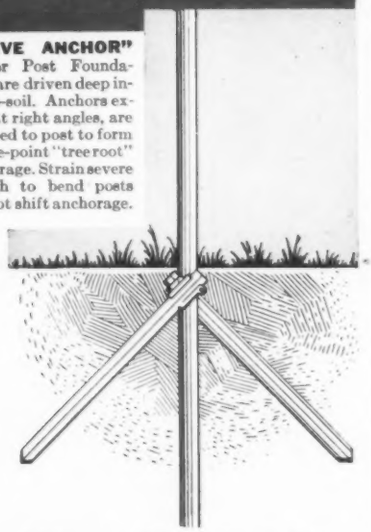
Address.....City.....

Carrier

ARMY E NAVY

AIR CONDITIONING • REFRIGERATION

How ANCHOR FENCE Solves Tough Protection Jobs



"DRIVE ANCHOR" Anchor Post Foundations are driven deep into sub-soil. Anchors extend at right angles, are clamped to post to form a three-point "tree root" anchorage. Strain severe enough to bend posts will not shift anchorage.

FROM Maine to California, architects have specified Anchor Fence for *tough* war plant protection jobs. They've counted on Anchor's exclusive features to give them *faster* fence erecting, greater strength, easier moving when necessary.

Anchor Fence can be quickly erected in any soil, in any weather, even when the ground is frozen. The exclusive, patented "Drive Anchors" hold the fence permanently erect and in line, resist terrific force, yet can be speedily moved without loss of post foundations in case of plant expansion.

Get the facts about Anchor Fences . . . see how they give extra protection, long life, low maintenance costs. Mail coupon below for Free Industrial Fence Catalog and name of nearest Anchor Fence Engineer. No obligation.

ANCHOR FENCE

NATION-WIDE SALES AND ERECTING SERVICE

ANCHOR POST FENCE CO.
6600 Eastern Ave.,
Baltimore, Md.

Please send me Anchor Catalog and name of nearest Anchor Fence Engineer. No obligation, of course.

Name.....

Address.....

City..... *State*.....

REQUIRED READING

(Continued from page 30)

NEW EDITIONS

STRUCTURAL MEMBERS AND CONNECTIONS.

Ed. by George A. Hool and W. S. Kinne . . . 2nd ed. New York (330 West 42nd St.), McGraw-Hill, 1943. 639 pp. illus. $6.00.

The third of the six volumes in the "Structural Engineers' Handbook Library" to be revised to incorporate changes in practice and to correct any errors noted in use of this standard work first published in 1923.

A. S. T. M. STANDARDS, 1942.

Pt. 2. Non-Metallic Materials—Constructional. Philadelphia (206 South Broad St.), Amer. Soc. for Testing Materials, 1942. 1482 pp. Tables. $9.00.

Triennial revision of the middle section of the work of which the other two parts deal with metals and general non-metallic materials. Emergency alternative provisions for certain specifications are included.

POST-WAR PLANNING IN THE U. S.

By George B. Galloway, New York (330 West 42nd St.), Twentieth Century Fund, 1943. 120 pp. 6⅛ by 9¼ in. $1.00.

A second edition of the directory published a year ago, with 32 additional entries bringing the total to 137 of which 28 are public groups, mostly branches of the federal government.

PERIODICAL LITERATURE

THE 57 VARIETIES

Architects' Journal. Cheam, Surrey, Eng. (45 The Avenue), May 13, 1943. p. 313.

Only publication of a "Simple Vocabulary of Planning," sponsored by the weightiest authorities will enable people to be even tolerably intelligible to each other. Consider whether the word planning is "meant to mean:" physical planning, or post-war planning or some part of it or merely scraps . . . or "(read this carefully) the devising of a series of actions by which it is intended to achieve a specified result; *or* the actual execution of the actions; *or* the achievement of the result, *or* any two, or all three . . ." Perhaps it would be best to use some entirely new words to describe what we now really mean by "P-t W-r P-g."

(Continued on page 100)

A LIGHT-REFLECTING FLOOR IS THE ANSWER.

Light-colored floors made with Atlas *White* portland cement, instead of gray portland cement or still darker materials, reflect more light on vertical work surfaces as well as on under surfaces. They improve seeing . . . speed production . . . reduce accidents. Installations for Boeing, Consolidated, Douglas, North American, and others prove this.

Light measurements made by General Electric in the Consolidated Aircraft Plant at Fort Worth show that a *white*-cement floor, compared with a gray-cement floor in the same plant—

- ▶ **increases illumination on vertical surfaces by 20%;**
- ▶ **increases by 61% the illumination on underside surfaces;**
- ▶ **reduces shadows and dark areas;**
- ▶ **reduces contrasts . . . makes seeing easier, more comfortable, and more efficient.**

Floors made with Atlas *White* portland cement help provide all the work-speeding advantages of better illumination. For the complete story, write today for your copy of the 24-page booklet, "Light from Floors." Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Building, New York City.

HOW ABOUT MAINTENANCE?

Experience shows white-cement floors are easy to clean, easy to keep clean, and retain their reflection advantage. Maintenance is simple—frequent sweeping, occasional damp mopping, periodic scrubbing.

AR-F-10

ATLAS WHITE CEMENT
For Light-Reflecting Floors

This is one of a series of advertisements telling what leading Consulting Engineers think of modern steam heating.

Paul D. Bemis, Consulting Engineer, Hartford, Conn. Member of American Society of Heating and Ventilating Engineers. Graduate of Wentworth Institute and U. S. Navy Steam Engineering School.

"In my opinion," writes Paul D. Bemis, "steam will continue as the leading medium for heating in Post War Planning, chiefly because of its flexibility, economical distribution cost, and adaptability for process work. I believe that special emphasis should be given to the conservation of fuel after the war. That is why modern controlled steam heating systems figure so prominently in post-war plans for new buildings and modernization."

Paul D. Bemis has specified Webster Moderator Systems of Steam Heating for many of the leading buildings in Hartford, including the Hartford Trust Company Building, Bellevue Square Housing Project, Charter Oak Housing Project, Sage, Allen & Company, Inc., St. Francis Hospital Convent Building. He also specified Webster Moderator Systems for the Cloonan Junior High School, Stamford, Conn., and the Monarch Life Insurance Company, Springfield. Mass.

STEAM Heats America . . . .

WARREN WEBSTER & COMPANY, Camden, New Jersey
Pioneers of Vacuum System of Steam Heating
Established 1888 : : Representatives in Principal U. S. Cities

By ELISABETH COIT, AIA

(Continued from page 98)

WATER SPRAY COOLING SYSTEM FOR FLAT ROOF BUILDINGS.

By A. B. Tappan. Engineering News-Record. New York (330 West 42nd St.), May 3, 1942. pp. 120-121. illus.

A light spray reduces the temperature in one-story industrial buildings 10-15° by partial evaporation which absorbs solar heat, and in an air-cooled building decreases the conditioning tonnage by 20 per cent. Secondary advantages include reduced fire hazard and increase in the life of the roofing by preventing evaporation of essential oils. A 1939 test based on a 10 hour day showed refrigeration reduced from 1080 to 800 tons which, at $200 a ton, saved $56,000. Less than the estimated $20,000 investment in spray cooling equipment sufficed; the maintenance and operating costs were negligible, for waste water from condensers and cooling coils was available; results were so satisfactory that second, third and fourth buildings are being so cooled.

SYMPOSIUM:

Is short-term housing more feasible . . . than long-term housing. Tommorow's Town. New York (512 Fifth Ave.), May 1943. V. 1, No. 3.

Half a dozen leading authorities contributed. "Actually . . . the true housing turnover is about once in 140 years. . . . What house now designed will not be a technical absurdity in 2000? As a rate of expendability . . . 30 years seems a desirable and ultimately attainable object." "Urban families have a profound attachment to their neighborhood . . . less with the house they occupy." A postwar worker's home "should be thought of as a chattel—like an automobile—rather than as real property. . . . There are obvious dangers in letting the desire for easy payments . . . keep housing in the market after it may have become a personal or community liability."

EARLY CITY PLANS FOR DETROIT.

By Buford L. Pickens. Art Quarterly, Detroit Institute of Arts (also 724 Fifth Ave., N. Y.), v. 6, No. 1, 1943. pp. 34-51, illus.

Cadillac's 17th century plan gave Fort Pontchatrian's citizens slices of land in French style allowing each family access to the River, and at the same time protection by the Fort. There remains today part of the layout designed about 1805-7 by the friend of Thomas Jefferson, Augustus Woodward, who, familiar with the radiating designs of Karlsruhe and Versailles, with Vitruvius' octagonal ideal city plan, and with Washington's gridiron with diagonals, made a design capable of extension as desired: An equilateral triangle, with sides 4,000 ft. each divided into 6 sections by a perpendicular line from every angle bisecting the opposite side, with large free spaces where 6 or 12 avenues intersect, with lots of about 5,000 sq. ft. and an alley to every lot; subordinate streets 60 ft. wide; grand avenues to the four cardinal points 200 ft. wide, and other avenues 120 ft. wide.

BARBER-COLMAN

MAXIMUM SERVICE Controls by BARBER-COLMAN COMPANY MINIMUM MAINTENANCE

GRILLES & REGISTERS
AIR DIFFUSERS

AUTOMATIC CONTROLS

AUTOMATIC CONTROLS

ECONOSTAT

An "Outside" controller, for multiple-occupancy installations which can not be satisfactorily controlled from a single thermostat. Heat is metered to the building by actual weather demands.

COMPENSATED CONTROL

A zone control system based on inside temperatures. This heat "anticipation" type system makes use of a Varitherm which matches the system to radiator temperature.

OUTSIDE-INSIDE SYSTEM

An improved type control system for hot water heating in which circulated water temperature is adjusted to compensate for outdoor temperature changes.

Special bulletins describe each of these systems in detail.

WITH WHICH YOU CAN BACK THE NEW

SAVE FUEL

CAMPAIGN . . .

Government sponsored advertising will emphasize the need for maximum fuel economy . . . stressing the importance of *automatic controls*. Barber-Colman Automatic Control Systems have demonstrated outstanding ability to reduce heating costs, as shown below. Specify Barber-Colman Controls to help the war effort!

EXAMPLES OF FUEL SAVINGS

A 36-suite apartment building in Seattle, Washington reduces fuel cost by *28.2%* with Barber-Colman zone control.

A group of parish buildings in West Allis, Wisconsin, reduces heating costs by *$1,200.00* a year with a new heating system and Barber-Colman controls.

A film exchange building in Milwaukee, Wisconsin, shows a reduction in cost of central station steam of *53.5%* after installing Barber-Colman controls.

An office building in Milwaukee, Wisconsin, after installing Barber-Colman zone controls, cuts steam cost by *9.9%*. Three other larger Milwaukee buildings, using various types of Barber-Colman systems, reduce heating costs by *15.6%*, *16.2%* and *28.4%*.

A hotel in Dayton, Ohio, estimates a fuel savings of *15%*, which will pay for the Barber-Colman control installation in two seasons.

A 4-story downtown store building in Indianapolis, Indiana uses *39.8%* less steam after installing a Barber-Colman Econostat system. An insurance building in Indianapolis is using *25%* less steam. A moderate-sized office and store building, even with increased occupancy, has reduced steam consumption by *31.1%*.

Write for Literature

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